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Natural
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Service

Washington Basin Outlook Report January 1, 1997

Basin Outlook Reports
and
Federal - State - Private
Cooperative Snow Surveys

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How forecasts are made

Most of the annual streamflow in the Western United States originates as snowfall that has accumulated high in the mountains during winter and early spring. As the snowpack accumulates, hydrologists estimate the runoff that will occur when it melts. Predictions are based on careful measurements of snow water equivalent at selected index points. Precipitation, temperature, soil moisture and antecedent streamflow data are combined with snowpack data to prepare runoff forecasts. Streamflow forecasts are coordinated by Natural Resources Conservation Service and National Weather Service hydrologists. This report presents a comprehensive picture of water supply conditions for areas dependent upon surface runoff. It includes selected streamflow forecasts, summarized snowpack and precipitation data, reservoir storage data, and narratives describing current conditions.

Snowpack data are obtained by using a combination of manual and automated SNOTEL measurement methods. Manual readings of snow depth and water equivalent are taken at locations called snow courses on a monthly or semi-monthly schedule during the winter. In addition, snow water equivalent, precipitation and temperature are monitored on a daily basis and transmitted via meteor burst telemetry to central data collection facilities. Both monthly and daily data are used to project snowmelt runoff.

Forecast uncertainty originates from two sources: (1) uncertainty of future hydrologic and climatic conditions, and (2) error in the forecasting procedure. To express the uncertainty in the most probable forecast, four additional forecasts are provided. The actual streamflow can be expected to exceed the most probable forecast 50% of the time. Similarly, the actual streamflow volume can be expected to exceed the 90% forecast volume 90% of the time. The same is true for the 70%, 30%, and 10% forecasts. Generally, the 90% and 70% forecasts reflect drier than normal hydrologic and climatic conditions; the 30% and 10% forecasts reflect wetter than normal conditions. As the forecast season progresses, a greater portion of the future hydrologic and climatic uncertainty will become known and the additional forecasts will move closer to the most probable forecast.

Helpfull Hints and Contacts

Helpful Internet addresses

National Water Climate Center (NWCC):
http://www.wcc.nrcs.usda.gov/

Oregon/Washington Snow Surveys:
http://crystal.or.nrcs.usda.gov/snowsurveys/

Washington NRCS Homepage:
http://conservpartners.wsu.edu/nrcs/CoopSnoSrvy.htm

NWCC Anonymous FTP Server:
ftp.wcc.nrcs.usda.gov
URL= ftp://ftp.wcc.nrcs.usda.gov

USGS Real-Time Streamflow Data:
http://wwwdwatcm.wr.usgs.gov/realtime/rt_latest_data.html

COE Hydrology and Hydraulics:
http://www.nps.usace.army.mil/hh/http/docs/hhbranch.htm

National Weather Service, Seattle
http://www.seawfo.noaa.gov/

Northwest Weather and Avalanche Center
http://www.nwac.noaa.gov/

Addresses, Phone Numbers & Email

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Washington
Water Supply Outlook

January 1997

General Outlook

WOW - What a winter! The Pacific Northwest has been deluged with adverse weather conditions for the last several months. Washington snowpack began accumulating early with heavy snowfall beginning in mid-October and continuing throughout November and December. Near record annual precipitation in the state made for saturated soil conditions. By Christmas the landscape was white. Many would think this good, however those that were traveling or trying to travel found mountain passes and highways closed by avalanche and blizzard conditions. Tens of thousands of people were displaced from their homes by power outages caused by freezing rain, wind storms, land slides, and flooding. The last few days of 1996 brought warming temperatures and heavy rain. Low elevation snow melted rapidly, swelling rivers and streams to capacity. Some major flooding occurred in the Southern Puget Sound and South East areas of the state. Urban flooding caused by frozen and plugged drains and outlets has been a problem in heavily populated areas. Property damage has been extensive.

Snowpack

The January 1 statewide SNOTEL reading showed the snowpack to be 230% of average. Snowpack varied over the state, with the Okanogan River Basin SNOTEL reporting the lowest with 163% of average, and the Lewis River Basin the highest at 296% of average. Westside averages from SNOTEL and January 1 snow surveys include the North Puget Sound river basins with 190% of average, the Olympic Peninsula basins with 178%, and the Lewis-Cowlitz basins with 257% of average. Snowpack along the east slopes of the Cascade Mountains includes the Yakima with 246%, and the Wenatchee with 208%. Snowpack in the Spokane River Basin was at 220%, and the Pend Oreille River Basin, including Canadian data, had 198% of average. Maximum snow cover in Washington was at Paradise Park SNOTEL on Mt. Rainier, with a water content of 54.1 inches. This site would normally have 23.6 inches of water content on January 1. The highest average in the state was Spirit Lake SNOTEL near Mt. St. Helens with 456% of average. The lowest snowpack in the state was at the Upper Wheeler SNOTEL near Wenatchee with 5.8 inches of snow-water-equivalent. Upper Wheeler would normally have 5.9 inches on January 1. Heavy, dense snowpack caused many buildings and roofs to cave in and collapse in Washington and Idaho. The dangers continue if current conditions persist. Avalanche dangers are still a threat in all mountainous regions in the state.

BASIN	PERCENT OF LAST YEAR	PERCENT OF AVERAGE
Spokane	467	220
Colville	N/A	N/A
Pend Oreille	198	198
Okanogan	122	163
Methow	133	193
Wenatchee	228	208
Chelan	156	189
Yakima	291	246
Walla Walla	550	251
Cowlitz	294	218
Lewis	631	296
White	274	254
Green	547	256
Central Puget Sound	508	240
North Puget Sound(Skagit River)	150	190
Olympic Peninsula	283	178

Precipitation

The National Weather Service and Natural Resources Conservation Service climate stations during the month of December showed much above average precipitation across the state. The highest percent of average in the state was at White Pass E.S. SNOTEL site near White Pass, Washington. White Pass E.S. reported 444% of average for a total of 24.7 inches. Average for this site is 5.6 inches for December. Averages for the water year varied from 126% of average in the Olympic Peninsula river basins to 201% of average in the Walla Walla river basins. The highest average for the water year is 287% of average at Yakima WSO Airport .

BASIN	DECEMBER PERCENT OF AVERAGE	WATER YEAR PERCENT OF AVERAGE
Spokane	207	170
Colville-Pend Oreille	169	161
Okanogan-Methow	160	137
Wenatchee-Chelan	171	136
Yakima	238	174
Walla Walla	257	201
Cowlitz-Lewis	228	164
White-Green	206	156
Central Puget Sound	161	149
North Puget Sound	171	137
Olympic Peninsula	161	126

Reservoir

Reservoir storage in Washington varied greatly due to fluctuating runoff and flood control management. Reservoir storage in the Yakima Basin was 445,400 acre feet, 77% of average. Storage at other reservoirs included Roosevelt at 87% of average, and the Okanogan reservoirs with 125% of average for January 1. The power generation reservoirs included the following: Coeur d'Alene Lake, 93,500 acre feet, or 72% of average; Chelan Lake, 374,500 acre feet, 99% of average and 55% of capacity; and Ross Lake at 142% of average and 79% of capacity. Greater than average releases continue from most reservoirs across the state. These numbers may change dramatically over the next few months in preparation for spring runoff and flood control.

BASIN	PERCENT OF CAPACITY	PERCENT OF AVERAGE
Spokane	39	72
Colville-Pend Oreille	78	90
Okanogan-Methow	71	125
Wenatchee-Chelan	55	99
Yakima	42	77
North Puget Sound	79	142

For more information contact your local Natural Resources Conservation Service office.

Streamflow

Forecasts for summer streamflow are mostly for well above average. They vary from 111% of average for the Columbia at Birchbank to 192% of average for the Colville River at Kettle Falls. January forecasts for some Western Washington streams include: Cedar River near Cedar Falls, 134%; Green River, 147%; and the Dungeness River, 122%. Some Eastern Washington streams include Mill Creek at Walla Walla, 167%; the Wenatchee River at Peshastin, 132%; and the Spokane River near Post Falls, 152%. December streamflows varied from well above average to much below. The South Fork Walla Walla near Milton Freewater was the highest at 263% of average; and the Yakima at Cle Elum, with 66% of average, was the lowest in the state. Other streamflows were the following percentage of average: the Cowlitz River, 137%; the Skagit River, 72%; the Okanogan River, 143%; the Spokane River, 111%; the Columbia at the Canadian border, 101%, and the Yakima River at Kiona, 81%.

BASIN	PERCENT OF AVERAGE MOST PROBABLE FORECAST (50 PERCENT CHANCE OF EXCELLENCE)
Spokane	147-152
Colville-Pend Oreille	111-192
Okanogan-Methow	125-148
Wenatchee-Chelan	119-138
Yakima	139-170
Walla Walla	128-167
Cowlitz-Lewis	122-156
White-Green	147
Central Puget Sound	134-148
North Puget Sound	119-124
Olympic Peninsula	122-124

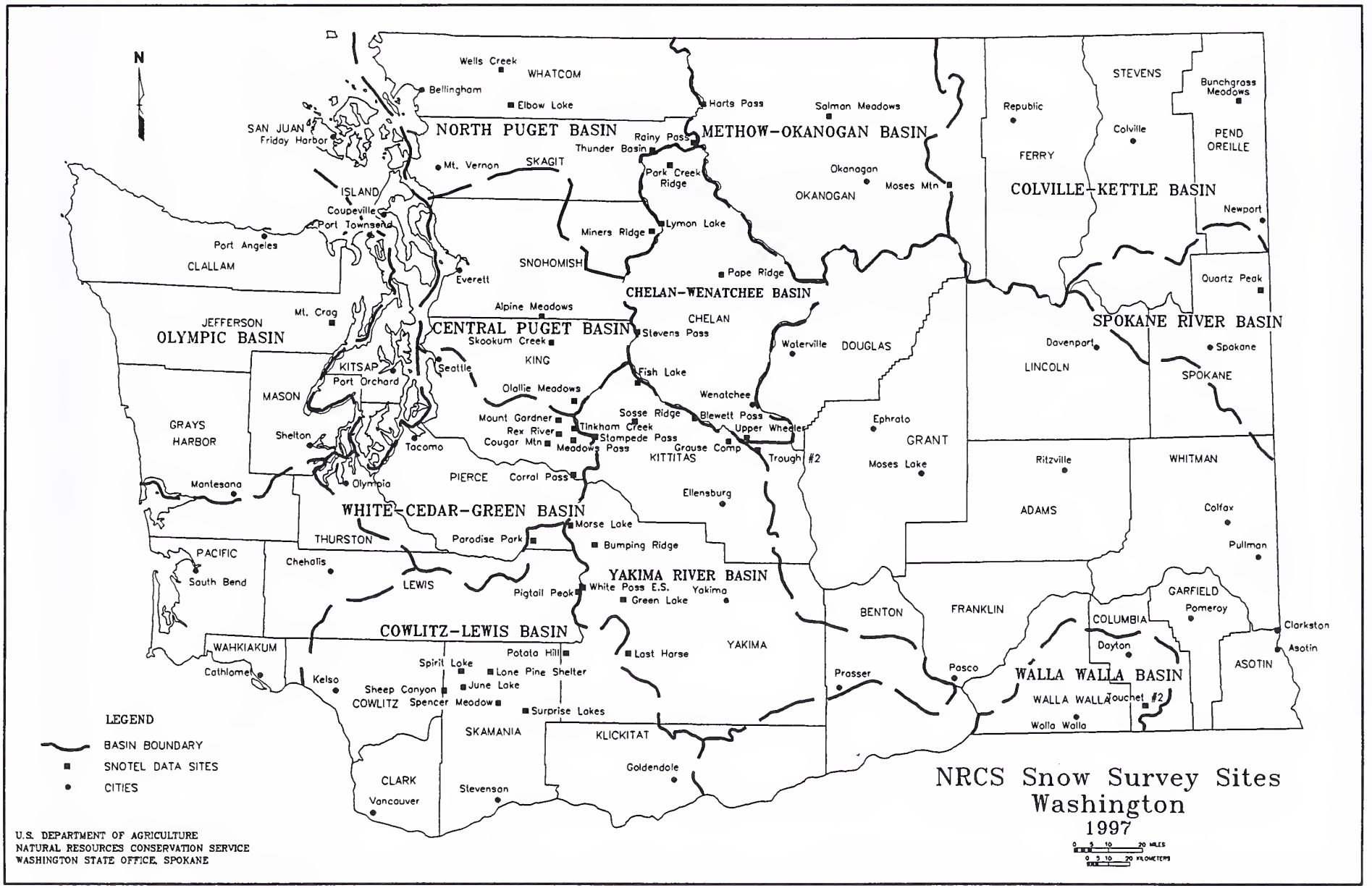
Rain-on-snow events caused extensive runoff and flooding across the state. Most streams and rivers were running bank full with some overflowing to cause minor to major flood damage. Counties effected the most by flooding are; Pierce, Thurston, Kitsap, Cowlitz, Lewis, and Clark on the west side along with Asotin, Columbia, and Walla Walla on the East side. Damage assessments are currently being completed by emergency management and conservation agencies.

For more information contact your local Natural Resources Conservation Service office.

BASIN SUMMARY OF SNOW COURSE DATA

JANUARY 1997

SNOW COURSE	ELEVATION	DATE	SNOW DEPTH	WATER CONTENT	LAST YEAR	AVERAGE 1961-90
AHTANUM R.S.	3100	1/01/97	---	8.7E	--	3.5
ALPINE MEADOWS PILL	3500	1/01/97	---	33.1S	4.3	17.9
ASHLEY DIVIDE	4820	1/01/97	---	6.6E	2.0	3.4
BADGER PASS PILLOW	6900	1/01/97	---	23.4	17.3	14.2
BARKER LAKES PILLOW	8250	1/01/97	---	10.7	8.2	6.8
BASIN CREEK PILLOW	7180	1/01/97	---	5.2	3.2	3.6
BASSOO PEAK	5150	1/03/97	42	12.0	--	--
BERNE-MILL CREEK (d)	3170	1/06/97	94	27.0E	8.2	11.2
BIG WHITE MTN CAN.	5100	12/31/96	46	12.8	11.7	7.8
BLACK PINE PILLOW	7100	1/01/97	---	9.4	7.8	4.9
BLEWETT PASS#2PILLOW	4270	1/01/97	---	18.0S	5.4	8.3
BRENDA MINE CAN.	4450	1/01/97	---	12.0	--	5.9
BUMPING LAKE (NEW)	3400	12/31/96	82	20.1	5.2	7.5
BUMPING RIDGE PILLOW	4600	1/01/97	---	29.5S	7.5	9.6
BUNCHGRASS MDWPILLOW	5000	1/01/97	---	26.2	4.7	10.9
CHESSMAN RESERVOIR	6200	12/31/96	14	2.8	.0	1.5
CHIWAUKUM G.S.	2500	1/06/97	45	11.1	5.5	4.8
COMBINATION PILLOW	5600	1/01/97	---	5.3	1.1	2.3
COPPER BOTTOM PILLOW	5200	1/01/97	---	12.2	4.7	4.7
CORRAL PASS PILLOW	6000	1/01/97	---	31.1S	11.9	13.5
COUGAR MTN. PILLOW	3200	1/01/97	---	22.1S	4.4	8.3
COYOTE HILL	4200	12/30/96	47	10.8	--	4.1
DALY CREEK PILLOW	5780	1/01/97	---	10.7	5.8	5.3
DISCOVERY BASIN	7050	12/30/96	44	8.9	6.2	4.4
DIX HILL	6400	12/29/96	40	9.8	3.2	5.0
DOMMERIE FLATS	2200	12/26/96	48	9.4	2.0	3.9
EAST RAGGED SADDLE	3740	1/05/97	59	22.2	2.3	9.9
ELBOW LAKE PILLOW	3200	1/01/97	---	31.4S	--	19.4
EMERY CREEK PILLOW	4350	1/01/97	---	14.7	4.6	7.2
ENDERBY CAN.	5800	12/31/96	71	25.6	26.8	18.7
FISH LAKE PILLOW	3370	1/01/97	---	30.5S	17.5	12.4
FLATTOP MTN PILLOW	6300	1/01/97	---	33.3	26.4	21.0
FOURTH OF JULY SUM	3200	12/30/96	48	13.2	.0	3.4
FROHNER MDWS PILLOW	6480	1/01/97	---	6.1	3.0	3.4
GRASS MOUNTAIN #2	2900	1/05/97	50	17.8	.0	4.8
GRAVE CRK PILLOW	4300	1/01/97	---	14.4	5.1	7.7
GREEN LAKE PILLOW	6000	1/01/97	---	25.8S	8.6	9.0
GREYBACK RES CAN.	4700	1/02/97	29	7.0	5.8	4.4
GRIFFIN CR DIVIDE	5150	1/02/97	44	12.2	--	--
GROUSE CAMP PILLOW	5380	1/01/97	---	17.6S	6.9	8.9
HAMILTON HILL CAN.	4550	1/05/97	46	11.8	7.9	5.5
HAND CREEK PILLOW	5030	1/01/97	---	12.7	4.1	5.5
HARTS PASS PILLOW	6500	1/01/97	---	29.9S	27.1	17.9
HELL ROARING DIVIDE	5770	12/28/96	78	21.1	14.8	13.0
HIGH RIDGE PILLOW	4980	1/01/97	---	23.9S	5.1	9.7
HOLBROOK	4530	1/04/97	36	9.0	3.8	4.0
HOODOO BASIN PILLOW	6050	1/01/97	---	40.6	18.5	19.0
HUMBOLDT GLCH PILLOW	4250	1/01/97	---	15.4	.3	5.6
ISINTOK LAKE CAN.	5100	10/33/97	25	5.2	3.7	3.3
JUNE LAKE PILLOW	3200	1/01/97	---	37.6S	2.9	11.5
KLESILKWA CAN.	3450	1/05/97	52	15.2	1.2	3.2
KRAFT CREEK PILLOW	4750	1/01/97	---	15.5	3.9	6.6
LESTER CREEK	3100	1/05/97	71	21.4	.0	8.0
LOLO PASS PILLOW	5240	1/01/97	---	25.9	12.1	12.6
LONE PINE PILLOW	3800	1/01/97	---	39.5S	6.4	12.0
LOOKOUT PILLOW	5140	1/01/97	---	30.3	7.7	13.5
LOST HORSE PILLOW	5000	1/01/97	---	22.5S	6.0	15.3
LOST LAKE PILLOW	6110	1/01/97	---	48.8	18.9	25.8
LUBRECHT FOREST NO 3	5450	1/02/97	26	7.0	1.6	2.6
LUBRECHT FOREST NO 4	4650	1/02/97	20	5.4	.6	1.4
LUBRECHT FOREST NO 6	4040	1/06/97	24	6.4	.6	1.6
LUBRECHT HYDROPLOT	4200	1/01/97	29	7.1	1.8	2.8
LUBRECHT PILLOW	4680	1/01/97	---	6.9	1.5	2.4
LYMAN LAKE PILLOW	5900	1/01/97	---	42.9S	28.1	25.4
LYNN LAKE	4000	1/05/97	53	16.6	1.8	7.6
MARIAS PASS	5250	12/26/96	52	16.2	5.9	6.7
MEADOWS PASS PILLOW	3240	1/01/97	---	34.2S	5.0	9.5
MERRITT	2140	1/06/97	63	18.2E	4.5	7.1
MICA CREEK PILLOW	4750	1/01/97	---	28.7	4.6	--
MISSEZULA MTN CAN.	4700	1/04/97	35	7.8	5.4	5.1
MOOSE CREEK PILLOW	6200	1/01/97	---	16.4	10.4	7.1
MORSE LAKE PILLOW	5400	1/01/97	---	51.7S	18.3	19.1
MOSES MTN PILLOW	4800	1/01/97	---	12.7S	9.1	6.5
MOSQUITO RDG PILLOW	5200	1/01/97	---	32.3	9.4	15.7
MOUNT CRAG PILLOW	4050	1/01/97	---	20.1S	7.1	11.3
MT. KOBAU CAN.	5500	12/31/96	44	10.3	6.3	6.2
MT. GARDNER PILLOW	2860	1/01/97	---	18.1S	2.7	5.8
N.F. ELK CR PILLOW	6250	1/01/97	---	10.3	5.3	4.6
NEVADA CREEK PILLOW	6480	1/01/97	---	11.6	5.4	5.7
NEZ PERCE CMP PILLOW	5650	1/01/97	---	12.2	6.9	5.7
NOISY BASIN PILLOW	6040	1/01/97	---	36.6	18.4	17.2
OLALLIE MDWS PILLOW	3960	1/01/97	---	45.0S	16.6	20.3
OPHIR PARK	7150	12/29/96	49	11.7	6.9	7.0
PARADISE PARK PILLOW	5500	1/01/97	---	54.1S	22.1	23.6
PARK CK RIDGE PILLOW	4600	1/01/97	---	39.3S	21.6	18.4
PETERSON MDW PILLOW	7200	12/30/96	---	7.6	4.7	4.2
PIGTAIL PEAK PILLOW	5900	1/01/97	---	45.6S	19.7	20.1
PIKE CREEK PILLOW	5930	1/01/97	---	22.8	12.7	11.4
PIPESTONE PASS	7200	12/31/96	20	4.8	.8	2.1
POPE RIDGE PILLOW	3540	1/01/97	---	20.7S	12.2	9.1
POTATO HILL PILLOW	4500	1/01/97	---	24.6S	6.3	10.5
QUARTZ PEAK PILLOW	4700	1/01/97	---	21.0	3.2	8.5
RAGGED MOUNTAIN	4200	1/05/97	60	22.7	2.5	9.0
RAINY PASS PILLOW	4780	1/01/97	---	29.5S	22.1	15.4
REX RIVER PILLOW	1900	1/01/97	---	26.6S	--	10.5
ROCKER PEAK PILLOW	8000	1/01/97	---	10.2	8.1	6.4
ROCKY CREEK AM	2100	1/01/97	---	15.8e	3.0	11.7
SF THUNDER CK AM	2200	1/01/97	---	7.2e	1.6	4.5
SADDLE MTN PILLOW	7900	1/01/97	---	21.4	18.2	11.1
SALMON MDWS PILLOW	4500	1/01/97	---	12.4S	4.6	3.9
SASSE RIDGE PILLOW	4200	1/01/97	---	32.7S	10.0	12.4
SAVAGE PASS PILLOW	6170	1/01/97	---	24.9	14.4	11.0
SAWMILL RIDGE	4700	1/05/97	97	33.0	6.8	13.3
SCHREIBERS MDW AM	3400	1/01/97	---	35.4e	8.2	21.9
SHEEP CANYON PILLOW	4050	1/01/97	---	23.0S	4.2	15.2
SILVER STAR MTN CAN.	5600	1/01/97	70	22.2	20.3	13.3
SKALKAHO PILLOW	7260	1/01/97	---	21.1	15.4	9.8
SKOOKUM CREEK PILLOW	3920	1/01/97	---	21.2S	--	19.0
SPENCER MDW PILLOW	3400	1/01/97	---	33.7S	6.6	9.4
SPIRIT LAKE PILLOW	3100	1/01/97	---	8.2S	.6	1.8
SPOTTED BEAR MTN.	7000	1/04/97	43	11.3	5.3	6.6
STAHL PEAK PILLOW	6030	1/01/97	---	26.4	22.4	16.0
STAMPEDE PASS PILLOW	3860	1/01/97	---	40.1S	12.9	16.7
STEMPLE PASS	6600	12/30/96	37	7.4	2.1	--
STEVENS PASS PILLOW	4070	1/01/97	---	32.6S	13.0	15.3
STEVENS PASS SAND SD	3700	1/06/97	103	31.9E	7.9	14.6
STORM LAKE	7780	12/30/96	43	9.3	6.8	5.4
STUART MOUNTAIN	7400	1/04/97	92	28.9	17.1	13.4
SUMMERLAND RES CAN.	5050	1/02/97	33	7.2	5.2	4.4
SUNSET PILLOW	5540	1/01/97	---	25.3	7.2	15.8
SURPRISE LKS PILLOW	4250	1/01/97	---	46.3S	9.0	20.2
TEN MILE LOWER	6600	1/02/97	24	5.6	1.1	3.0
TEN MILE MIDDLE	6800	12/31/96	33	7.0	2.3	4.7
TINKHAM CREEK PILLOW	3000	1/01/97	---	29.5S	7.9	7.6
TOUCHET #2 PILLOW	5530	1/01/97	---	32.8	5.2	12.9
TRINKUS LAKE	6100	1/04/97	112	36.0	15.6	18.7
TROUGH #2 PILLOW	5310	1/01/97	---	10.3S	5.3	4.9
TRUMAN CREEK	4060	1/01/97	---	4.1E	1.3	2.0
TUNNEL AVENUE	2450	12/27/96	73	17.4	4.0	8.1
TV MOUNTAIN	6800	1/04/97	63	18.0	8.6	7.2
TWELVEMILE PILLOW	5600	1/01/97	---	17.2	3.8	7.2
TWIN CAMP	4100	1/05/97	78	25.1	6.3	10.0
TWIN LAKES PILLOW	6400	1/01/97	---	31.4	21.1	16.3
TWIN SPIRIT DIVIDE	3480	1/05/97	53	17.0	2.0	6.8
UPPER HOLLAND LAKE	6200	1/04/97	80	25.4	15.0	15.8
UPPER WHEELER PILLOW	4400	1/01/97	---	5.8S	4.9	5.9
WARM SPRINGS PILLOW	7800	1/01/97	---	14.8	16.9	9.4
WATSON LAKES AM	4500	1/01/97	---	36.3e	9.5	24.2
WEASEL DIVIDE	5450	1/01/97	---	25.3E	16.4	15.3
WELLS CREEK PILLOW	4200	1/01/97	---	27.3S	--	20.0
WHITE PASS ES PILLOW	4500	1/01/97	---	29.5e	5.9	9.8
WHITE ROCKS MTN CAN.	7200	1/06/97	51	15.2	10.7	10.7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Wells Creek
WHATCOM
Bellingham
Elbow Lake
Harts Pass
Salmon Meadows
SAN JUAN
Friday Harbor
NORTH PUGET BASIN
METHOW-OKANOGAN BASIN
Rainy Pass
Thunder Basin
Mt. Vernon
SKAGIT
Park Creek Ridge
Okanogan
Moses Mtn
OKANOGAN
ISLAND
Coupeville
Port Townsend
Miners Ridge
Lymon Lake
Port Angeles
CLALLAM
SNOHOMISH
Everett
Pape Ridge
CHELAN-WENATCHEE BASIN
Alpine Meadows
Mt. Crag
JEFFERSON
OLYMPIC BASIN
CENTRAL PUGET BASIN
CHELAN
Skookum Creek
Stevens Pass
Waterville
DOUGLAS
KING
KITSAP
Port Orchard
Seattle
Fish Lake
Olallie Meadows
MASON
Wenatchee
Mount Gardner
Sosse Ridge
Blewett Pass
GRAYS HARBOR
Shelton
Tinkham Creek
Rex River
Stampede Pass
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Meadows Pass
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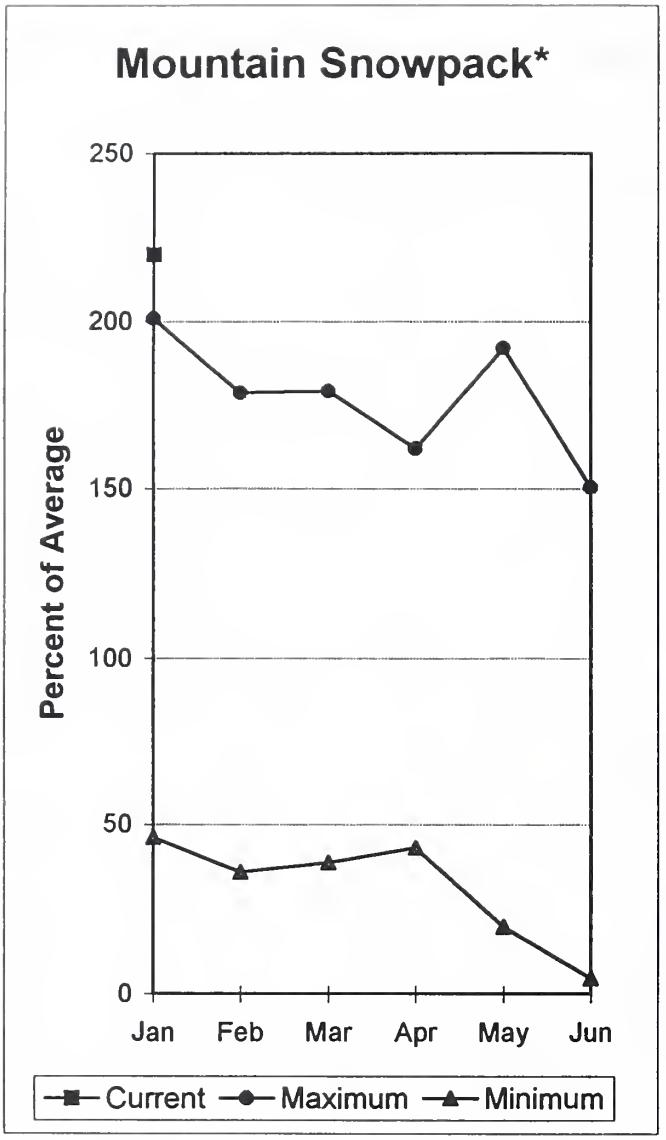
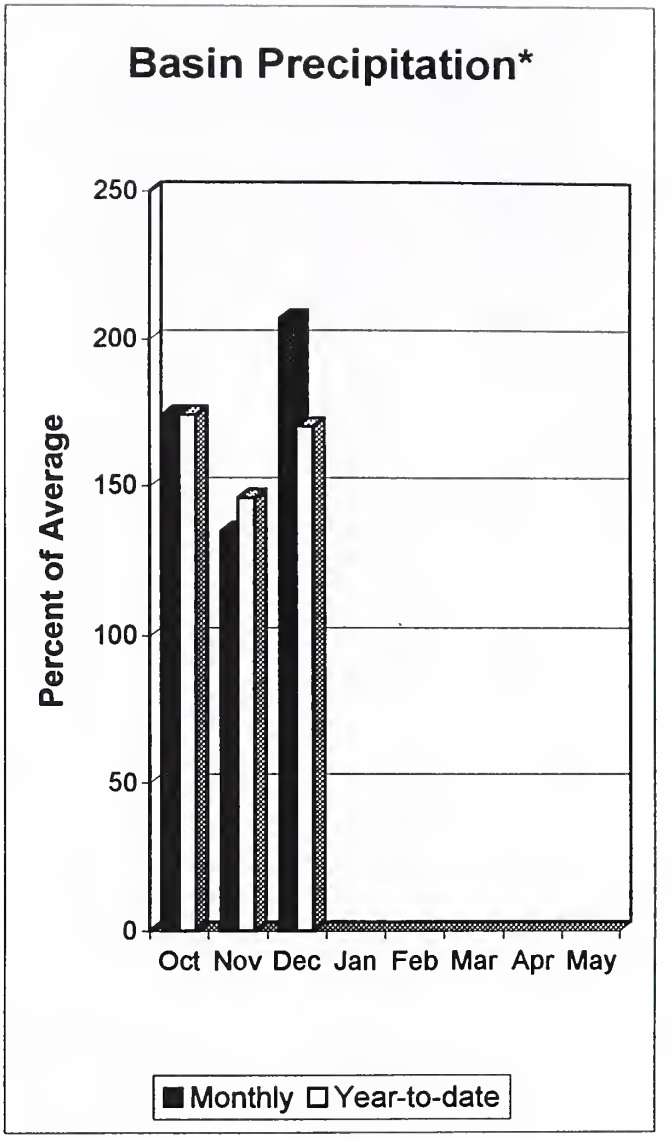
KITTITAS
Trough #2
Ephrata
GRANT
Moses Lake
Olympia
PIERCE
Corral Pass
Montesano
Ellensburg
WHITE-CEDAR-GREEN BASIN
Morse Lake
Ritzville
ADAMS
WHITMAN
Colfax
THURSTON
Parodise Park
Bumping Ridge
Pullman
PACIFIC
Chehalis
South Bend
YAKIMA RIVER BASIN
LEWIS
White Pass E.S.
Yakima
Pigtail Peak
Green Lake
GARFIELD
Pomeroy
BENTON
FRANKLIN
COLUMBIA
Clarkston
COWLITZ-LEWIS BASIN
Dayton
Asotin
WAHKIAKUM
Potato Hill
Lost Horse
YAKIMA
Spirit Lake
Lone Pine Shelter
Cathlamet
Kelso
Sheep Canyon
June Lake
Prosser
Pasco
WALLA WALLA BASIN
COWLITZ
Spencer Meadow
Surprise Lakes
Touchet #2
WALLA WALLA
Walla Walla
SKAMANIA
KLICKITAT
Goldendale
CLARK
Vancouver
Stevenson
LEGEND
BASIN BOUNDARY
SNOTEL DATA SITES
CITIES
U.S. DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE
WASHINGTON STATE OFFICE, SPOKANE
STEVENS
Republic
Bunchgrass Meadows
Colville
PEND OREILLE
FERRY
COLVILLE-KETTLE BASIN
Newport
Quartz Peak
SPOKANE RIVER BASIN
Davenport
Spokane
LINCOLN
SPOKANE
NRCS Snow Survey Sites
Washington
1997
0 5 10 20 MILES
0 5 10 20 KILOMETERS

Spokane River Basin





*Based on selected stations

The January 1 forecasts for summer runoff within the Spokane River Basin are 152% of average near Post Falls and 147% of average at Long Lake. The forecast is based on a basin snowpack that is 247% of average and precipitation that is 170% of average for the water year. Precipitation for December was 207% of average. Streamflow on the Spokane River at Long lake was 111% of average for December. January 1 storage in Coeur d'Alene Lake was 93,500 acre feet, 72% of average, and 39% of capacity. Temperatures in the basin were near average during December.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SPOKANE near Post Falls (2)	APR-SEP	3347	3825	4150	152	4475	4953	2730
	APR-JUL	3215	3682	4000	152	4318	4785	2633
SPOKANE at Long Lake	APR-JUL	3534	4020	4350	148	4680	5166	2936
	APR-SEP	3803	4307	4650	147	4993	5497	3159

SPOKANE RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
COEUR D'ALENE	238.5	93.5	146.5	130.5

SPOKANE RIVER BASIN
Watershed Snowpack Analysis - January 1, 1997

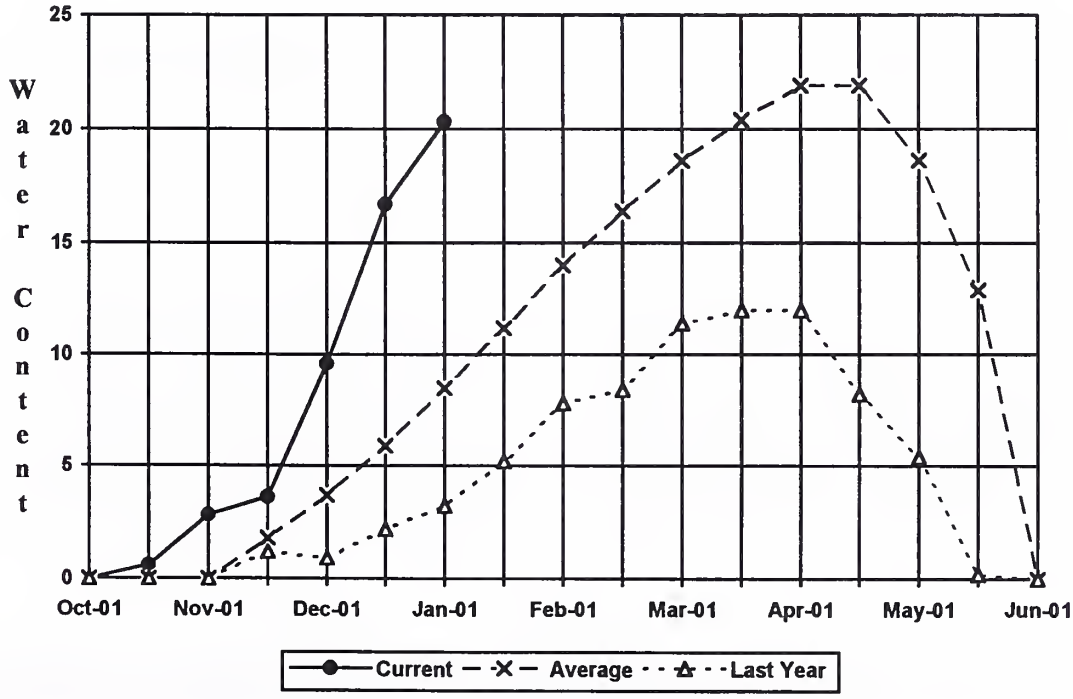
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SPOKANE RIVER	11	467	220
NEWMAN LAKE	1	656	247

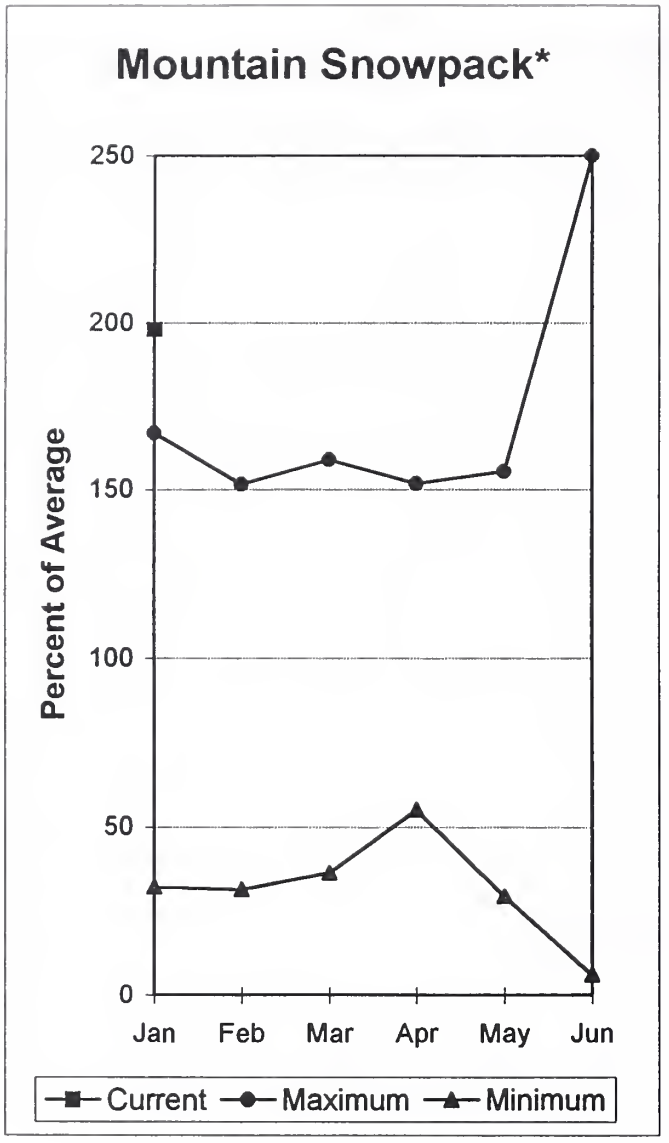
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

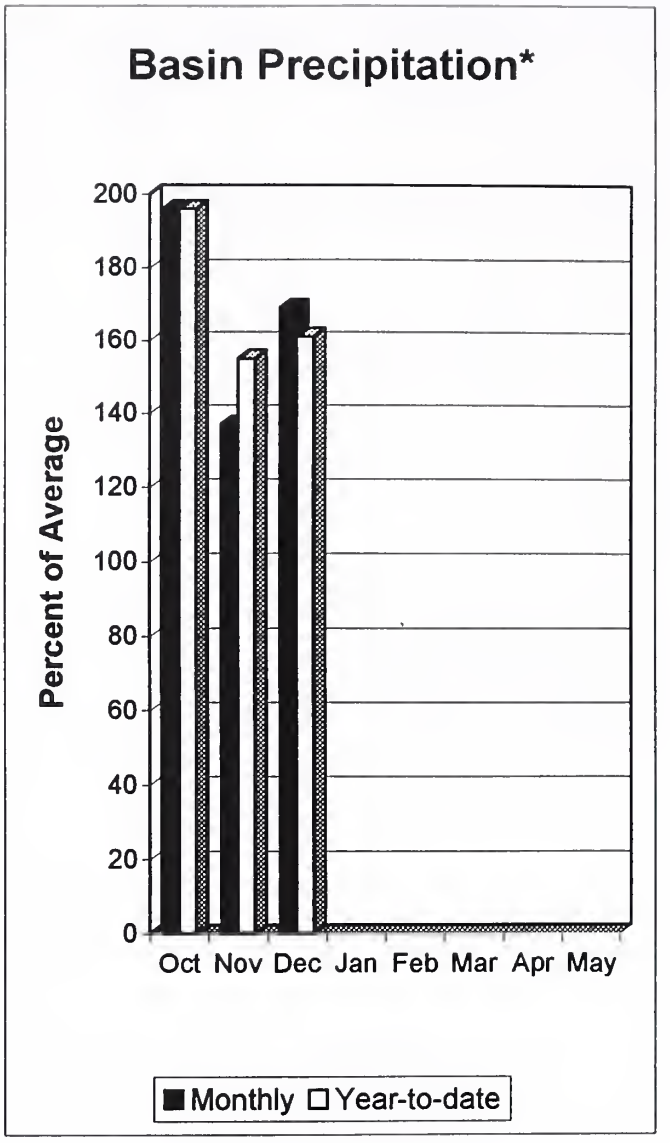
The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Quartz Peak SNOTEL
Elevation 4700 ft.







*Based on selected stations

The forecast for the Kettle River streamflow is for 140% of average; the Pend Oreille, below Box Canyon, 140%; and the Priest River, near the town of Priest River, 142% of average for the summer runoff period. Forecast for the Columbia River at Birchbank is for runoff to be 111% of average. December streamflow was 79% of average on the Pend Oreille River,101% on the Columbia at the International Boundary, and 163% on the Kettle River. January 1 snow cover was 198% of average in the Pend Oreille Basin. Snowpack at Bunchgrass Meadow SNOTEL site contained 26.2 inches of water, compared to the average January 1 reading of 10.9 inches. Precipitation during December was 169% of average, bringing the water year-to-date to 161% of average. Temperatures were near normal for December.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
PEND OREILLE Lake Inflow (1,2)	APR-JUL	12817	16519	18200	138	19881	23583	13150
	APR-SEP	14013	18061	19900	139	21739	25866	14370
	APR-JUN	10619	14113	15700	138	17287	20781	11390
PRIEST nr Priest River (1,2)	APR-JUL	841	1054	1150	141	1246	1459	814
	APR-SEP	901	1127	1230	142	1333	1559	868
PEND OREILLE bl Box Canyon (1,2)	APR-JUL	14043	17246	18700	140	20154	23357	13380
	APR-SEP	15317	18813	20400	140	21987	25483	14590
	APR-JUN	12193	14949	16200	140	17451	20207	11570
CHAMOKANE CREEK near Long Lake	MAY-AUG	7.63	10.69	12.78	150	14.87	17.93	8.52
COLVILLE at Kettle Falls	APR-SEP	198	230	251	192	272	304	131
	APR-JUL	182	212	232	193	252	282	120
	APR-JUN	170	197	215	194	233	260	111
KETTLE near Laurier	APR-SEP	2189	2428	2590	140	2752	2991	1854
	APR-JUL	2083	2307	2460	140	2613	2837	1761
	APR-JUN	1905	2111	2250	142	2389	2595	1585
COLUMBIA at Birchbank (1,2)	APR-JUL	30807	36510	39100	111	41690	47393	35140
	APR-SEP	38313	45456	48700	111	51944	59087	43810
	APR-JUN	22498	26625	28500	111	30375	34502	25670
COLUMBIA at Grand Coulee Dm (1,2)	APR-SEP	60545	73030	78700	121	84370	96855	64850
	APR-JUL	50976	61445	66200	121	70955	81424	54543
	APR-JUN	39840	47996	51700	121	55404	63560	42756

COLVILLE - PEND OREILLE RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROOSEVELT	5232.0	3960.7	4695.4	4547.9
BANKS	715.0	680.2	688.2	618.3

COLVILLE - PEND OREILLE RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

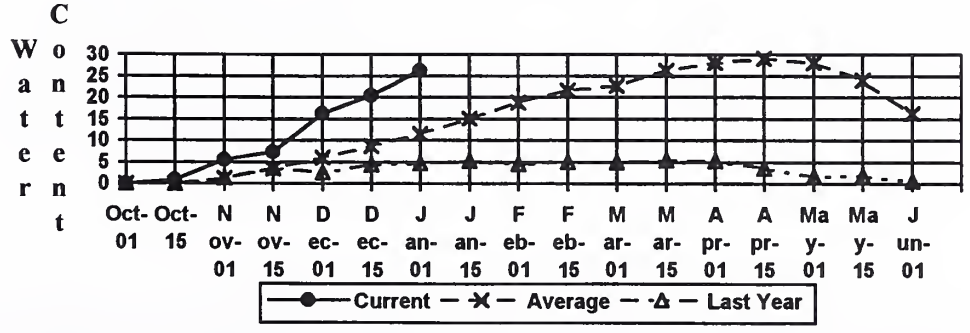
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
COLVILLE RIVER	0	0	0
PEND OREILLE RIVER	59	198	198
KETTLE RIVER	1	109	164

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

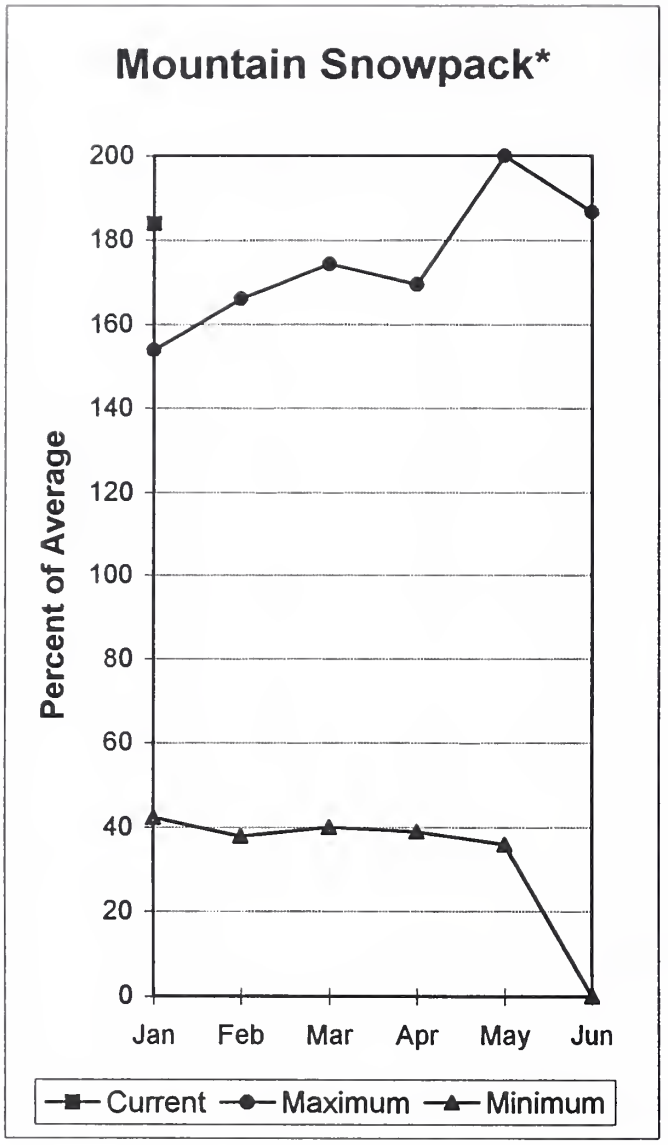
The average is computed for the 1961-1990 base period.

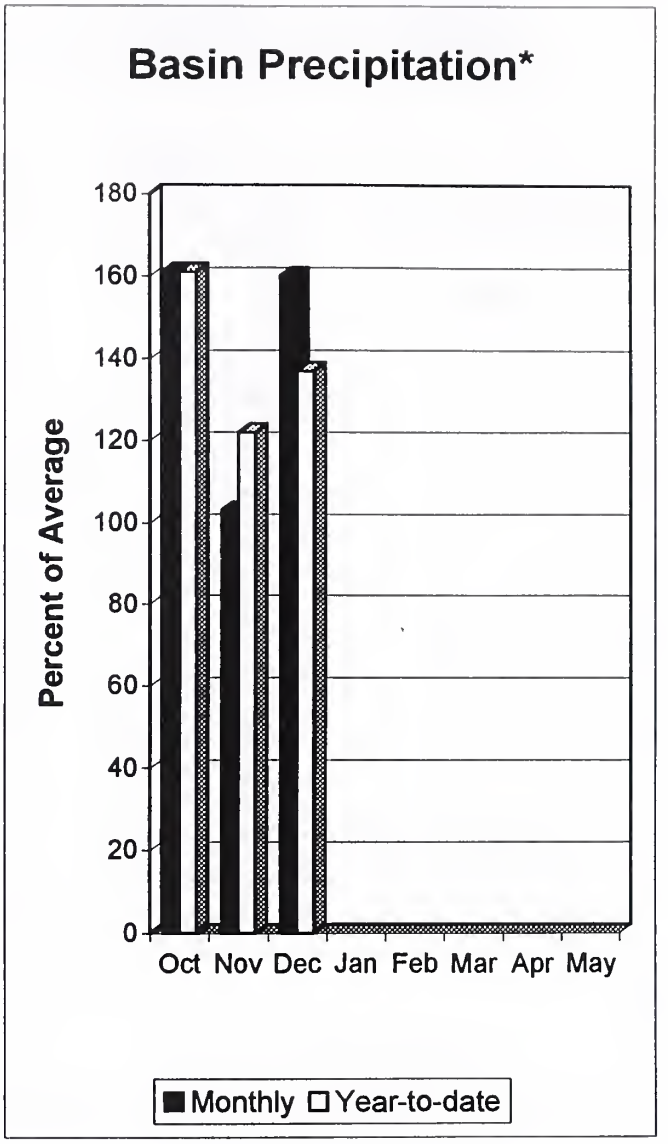
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Bunchgrass Meadow SNOTEL
Elevation 5000 ft.



Okanogan - Methow River Basins





*Based on selected stations

Summer runoff forecast for the Okanogan River is 133% of average; the Similkameen River, 135%, the Methow River, 125%, and Salmon Creek, 148% of average. January 1 snow cover on the Okanogan was 163% of average, and the Methow, 193%. December precipitation in the Okanogan-Methow was 160% of average, with water year-to-date at 137% of average. December streamflow on the Methow River was 111% of average, 143% on the Okanogan River, and 88% on the Similkameen. Snow-water-content at the Harts Pass SNOTEL, elevation 6,500 feet, was 29.9 inches. Average for this site is 17.9 inches. Storage in the Conconully Reservoir was 16,700 acre feet, which is 71% of capacity and 125% of the January 1 average.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
SIMILKAMEEN near Nighthawk (1)	APR-SEP	1119	1671	1890	135	2109	2672	1399
	APR-JUL	1130	1584	1790	137	1996	2450	1304
	APR-JUN	1014	1372	1535	138	1698	2056	1113
OKANOGAN near Tonasket (1)	APR-SEP	1185	1876	2150	133	2424	3116	1623
	APR-JUL	1133	1685	1935	132	2185	2737	1466
	APR-JUN	982	1428	1630	132	1832	2278	1233
SALMON CREEK near Conconully	APR-JUL	12.8	22	28	147	34	43	19.1
	APR-SEP	13.8	23	30	148	36	45	20
METHOW RIVER near Pateros	APR-SEP	669	1055	1180	125	1305	1686	942
	APR-JUL	808	976	1090	125	1204	1372	873
	APR-JUN	689	832	930	125	1028	1171	746

OKANOGAN - METHOW RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
SALMON LAKE		NO REPORT		
CONCONULLY RESERVOIR		NO REPORT		

OKANOGAN - METHOW RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

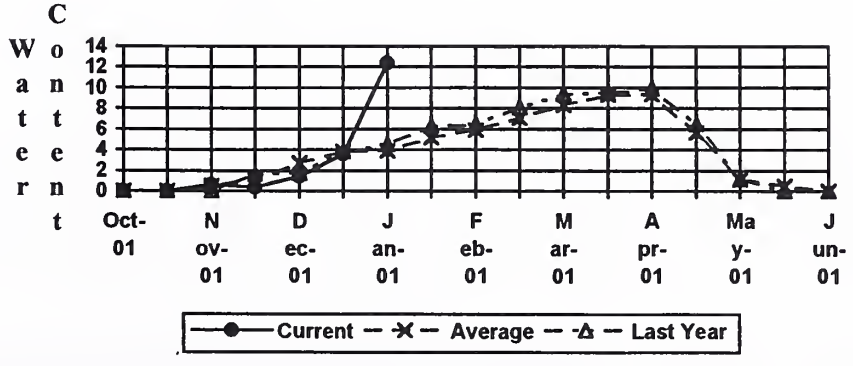
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
OKANOGAN RIVER	9	122	163
OMAK CREEK	1	140	195
SANPOIL RIVER	0	0	0
SIMILKAMEEN RIVER	2	147	185
CONCONULLY LAKE	1	270	318
METHOW RIVER	3	133	193

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

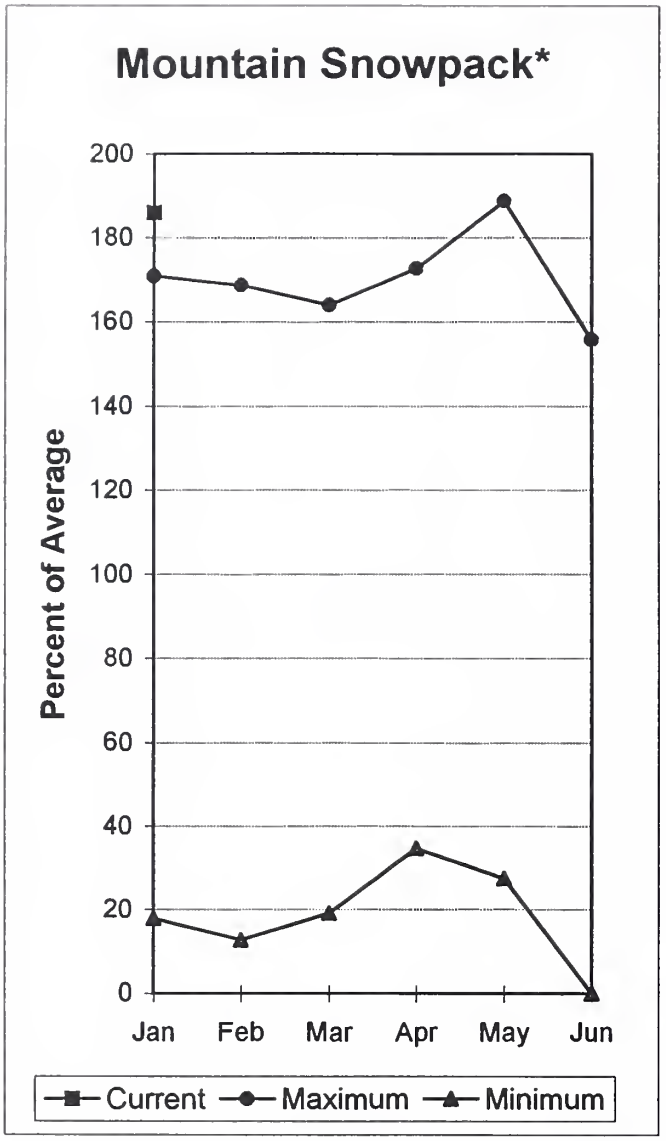
The average is computed for the 1961-1990 base period.

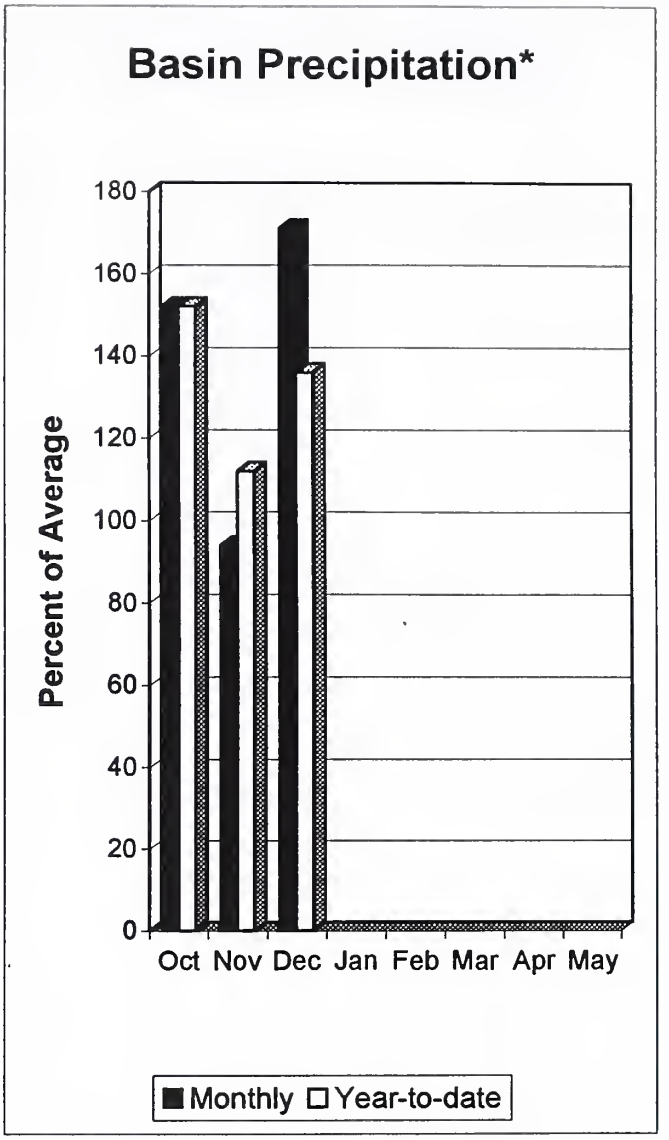
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Salmon Meadows SNOTEL
Elevation 4500 ft.



Wenatchee - Chelan River Basins





*Based on selected stations

Precipitation during December was 171% of average in the basin and 136% for the year to date. Runoff for the Entiat River is forecast to be 119% of average for the summer. The April-September forecast for the Chelan River is for 121%, for the Wenatchee River it is 138%, and 124% on the Stehekin. Icicle Creek is forecast to be above average this summer. Streamflow for December on the Chelan River was 100% of average and on the Wenatchee River it was 101% of average. January 1 snowpack in the Wenatchee Basin was 208% of average, which is 228% of last year. The Chelan Basin was 189% of average along with Trough SNOTEL on Colockum Ridge at 210% and Stemilt Creek at 98% of average. Snowpack in the Entiat River Basin was at 227% of average. Reservoir storage in Lake Chelan was 374,500 acre feet or 99% of January 1 average and 55% of capacity. Lyman Lake SNOTEL had the most snow water with 42.9 inches of water. This site would normally have 25.4 inches and last year it had 28.1 inches.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CHELAN RIVER near Chelan	APR-SEP	1249	1339	1400	121	1461	1551	1160
	APR-JUL	1130	1202	1250	122	1298	1370	1024
	APR-JUN	912	959	990	122	1021	1068	812
STEHEKIN near STEHEKIN	APR-SEP	913	980	1025	124	1070	1137	827
	APR-JUL	797	840	870	124	900	943	701
	APR-JUN	638	657	670	125	683	702	538
ENTIAT RIVER near Ardenvoir	APR-SEP	198	241	270	119	299	342	227
	APR-JUL	184	223	250	121	277	316	206
	APR-JUN	154	184	205	121	226	256	169
WENATCHEE at Plain	APR-SEP	1348	1522	1640	138	1758	1932	1190
	APR-JUL	1273	1414	1510	141	1606	1747	1072
	APR-JUN	1038	1141	1210	140	1279	1382	864
WENATCHEE R. at Peshastin	APR-SEP	1538	1917	2160	132	2403	2781	1636
	APR-JUL	1419	1741	1960	132	2179	2501	1485
	APR-JUN	1155	1414	1590	132	1766	2025	1204
STEMILT nr Wenatchee (miners in)	MAY-SEP	137	166	186	135	206	235	138
COLUMBIA R. bl Rock Island Dam (2)	APR-SEP	66723	78677	86800	123	94923	106877	70485
	APR-JUL	56635	66737	73600	123	80463	90565	59736
	APR-JUN	44536	52434	57800	123	63166	71064	47007

WENATCHEE - CHELAN RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
CHELAN LAKE	676.1	374.5	629.5	378.7

WENATCHEE - CHELAN RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

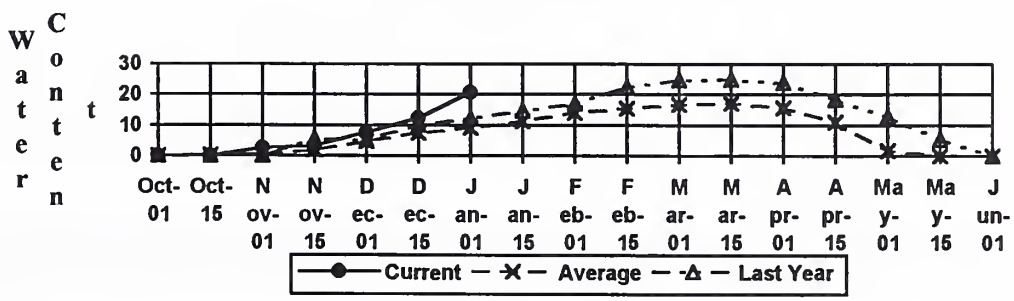
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CHELAN LAKE BASIN	4	154	180
ENTIAT RIVER	1	170	227
WENATCHEE RIVER	10	228	208
SQUILCHUCK CREEK	0	0	0
STEMILT CREEK	1	118	98
COLOCKUM CREEK	1	194	210

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

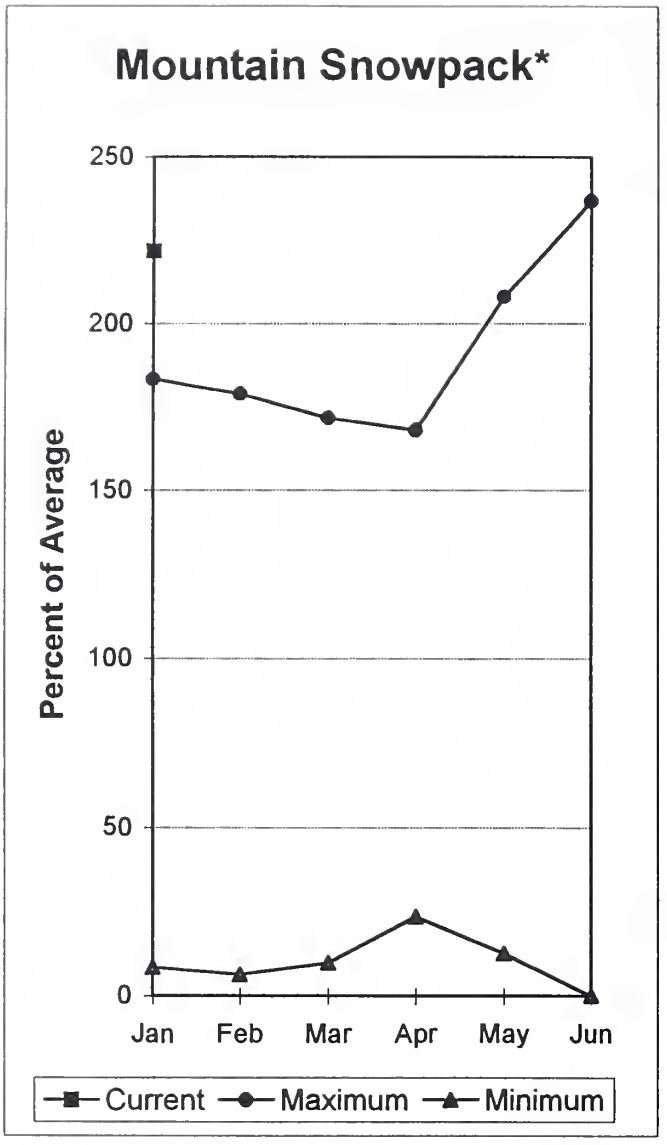
The average is computed for the 1961-1990 base period.

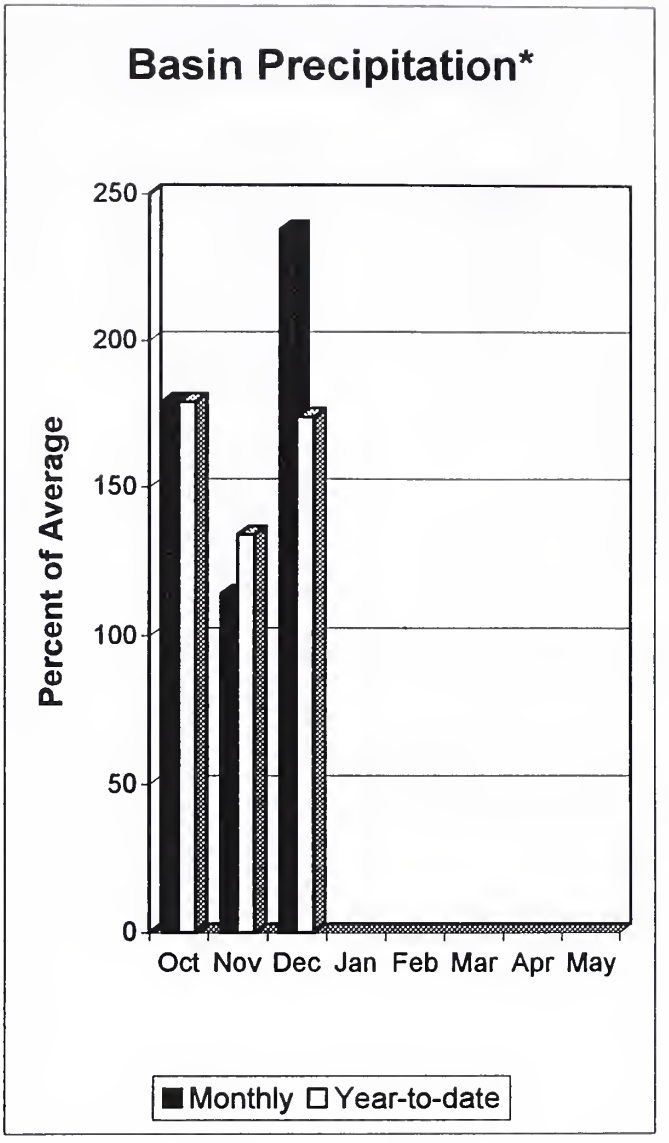
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.
<Insert Forecast Table Here>

Pope Ridge SNOTEL
Elevation 3540 ft.



Yakima River Basin





*Based on selected stations

January 1 reservoir storage for the five major reservoirs was 445,400 acre feet, 77% of average, compared to 777,200 last year. January 1 summer streamflow forecasts are for much above average in the Yakima Basin. Forecasts for the Yakima River at Cle Elum are for 139% of average; Naches River, 148%; the Yakima River near Parker, 150%; Ahtanum Creek, 154%; and the Tieton River, 147%. The Klickitat River near Glenwood is forecast at 156% of average flows this summer. December streamflows within the basin were; the Yakima River near Parker 70% of average; the Yakima near Cle Elum, 66%; and the Naches River at 69%. January 1 snowpack was 246% based upon 13 snow courses and SNOTEL readings within the Yakima Basin. Precipitation was 238% of average for December and 174% for the water year-to-date. Volume forecasts for the Yakima Basin are for natural flow. As such, they may differ from the U.S. Bureau of Reclamation's forecast for the total water supply available which includes irrigation return flow.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
KEECHELUS LAKE INFLOW	APR-JUL	139	161	176	142	191	213	124
	APR-SEP	148	172	188	139	204	228	135
	APR-JUN	124	141	153	140	165	182	109
KACHESS LAKE INFLOW	APR-JUL	123	145	159	143	173	195	111
	APR-SEP	128	151	166	141	181	204	118
	APR-JUN	114	131	142	143	153	170	99
CLE ELUM LAKE INFLOW	APR-JUL	511	573	615	150	657	719	409
	APR-SEP	543	613	660	147	707	777	448
	APR-JUN	440	487	518	150	549	596	345
YAKIMA at Cle Elum	APR-JUN	832	941	1015	141	1089	1198	721
	APR-JUL	950	1084	1175	141	1266	1400	832
	APR-SEP	1028	1172	1270	139	1368	1512	915
BUMPING LAKE INFLOW	APR-SEP	171	195	211	155	227	251	136
	APR-JUL	160	181	195	157	209	230	124
	APR-JUN	136	152	163	157	174	190	104
AMERICAN RIVER near Nile	APR-SEP	169	187	200	170	213	231	118
	APR-JUL	156	173	185	170	197	214	109
	APR-JUN	132	146	156	170	166	180	92
RIMROCK LAKE INFLOW	APR-SEP	295	328	350	147	372	405	238
	APR-JUL	252	279	298	149	317	344	200
	APR-JUN	208	229	243	150	257	278	162
NACHES near Naches	APR-SEP	1020	1145	1230	148	1315	1440	832
	APR-JUL	937	1054	1133	150	1212	1329	755
	APR-JUN	812	910	977	150	1044	1142	651
AHTANUM CREEK nr Tampico (2)	APR-SEP	50	63	71	154	80	92	46
	APR-JUL	46	57	65	155	73	84	42
	APR-JUN	40	49	56	156	63	73	36
YAKIMA near Parker	APR-SEP	2496	2790	2990	150	3190	3484	1994
	APR-JUL	2281	2557	2745	152	2933	3209	1805
	APR-JUN	2034	2270	2430	152	2590	2826	1597
KLICKITAT near Glenwood	APR-JUN	132	154	168	153	182	204	110
	APR-SEP	173	200	218	156	236	263	140

YAKIMA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
KEECHELUS	157.8	85.6	118.8	83.0
KACHESS		NO REPORT		
CLE ELUM	436.9	182.6	314.5	230.2
BUMPING LAKE	33.7	7.9	15.2	6.3
RIMROCK	198.0	93.4	141.8	102.1

YAKIMA RIVER BASIN
Watershed Snowpack Analysis - January 1, 1997

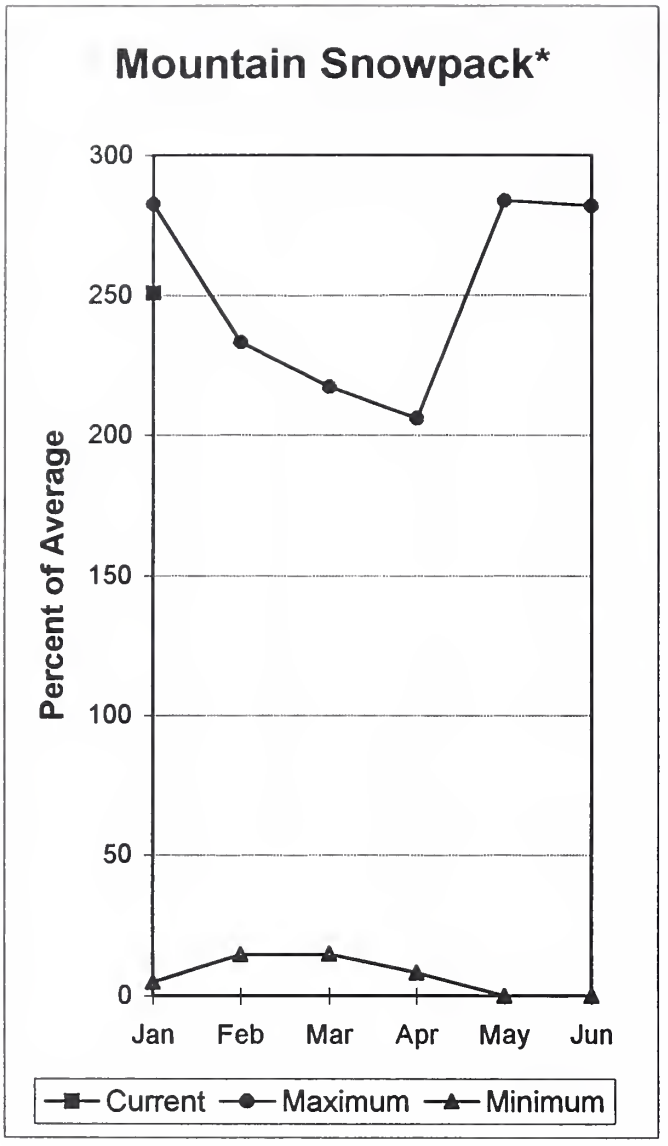
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
YAKIMA RIVER	14	300	250
AHTANUM CREEK	2	331	199

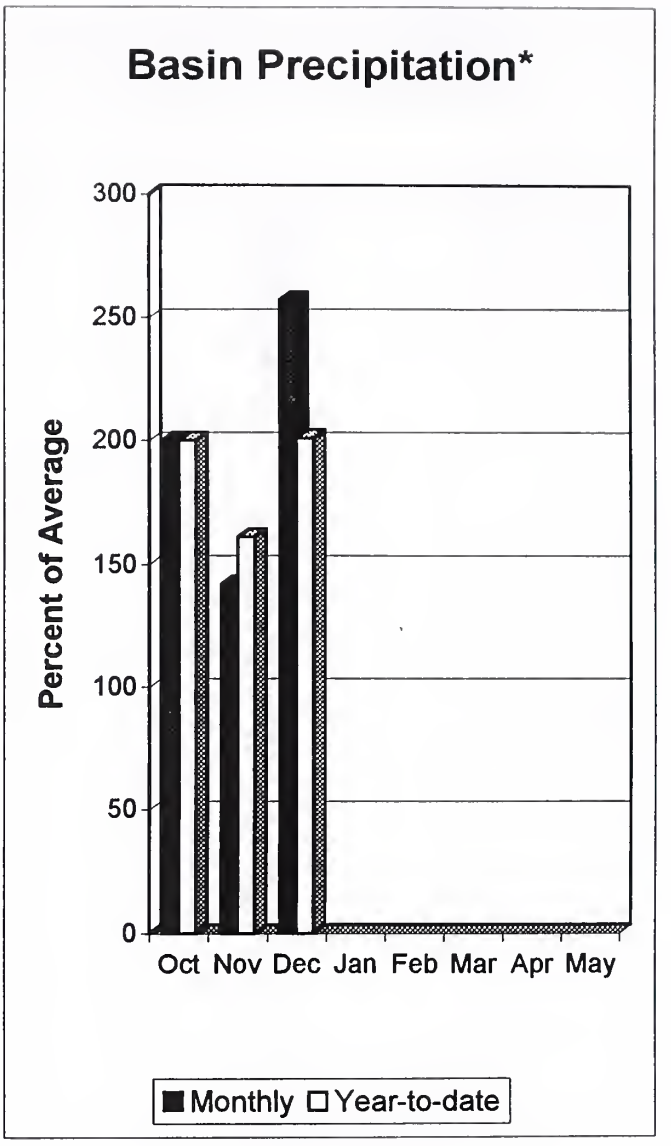
* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Walla Walla River Basin





*Based on selected stations

December precipitation was 257% of average, bringing the year-to-date precipitation to 201% of average. January 1 snowpack was at 251% of average, compared to 46% last year. The forecast is for 128% of average streamflow in the Walla Walla River for the coming summer, for the Grande Ronde at Troy, 162%, and 167% for Mill Creek. December streamflow was 263% of average for the Walla Walla River, 120% for the Snake River, and 177% for the Grande Ronde River near Troy. The Touchet SNOTEL site had 32.8 inches of snow-water-equivalent. The average January 1 reading for this site is 12.9 inches. This area of the state was hit hard by rain-on-snow and much above normal temperature events that caused major flooding. Considerable property damage resulted from this years floods.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GRANDE RONDE at Troy (1)	MAR-JUL	1627	2138	2370	161	2602	3113	1471
	APR-SEP	1446	1910	2120	162	2330	2794	1312
SNAKE blw Lower Granite Dam (1,2)	APR-JUL	22127	29604	33000	152	36396	43873	21650
	APR-SEP	24882	33284	37100	152	40916	49318	24360
MILL CREEK at Walla Walla	APR-SEP	18.8	25	29	167	33	38	17.1
	APR-JUL	18.6	24	28	168	32	38	16.9
	APR-JUN	18.3	24	28	168	32	38	16.7
SF WALLA WALLA near Milton-Freewater	APR-JUL	58	65	70	132	75	82	53
	APR-SEP	71	79	85	128	90	98	66
COLUMBIA R. at The Dalles (2)	APR-SEP	98656	116128	128000	129	139872	157344	98982
	APR-JUL	84932	99858	110000	130	120142	135068	84760
	APR-JUN	69319	81395	89600	130	97805	109881	68925

WALLA WALLA RIVER BASIN
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WALLA WALLA RIVER BASIN
Watershed Snowpack Analysis - January 1, 1997

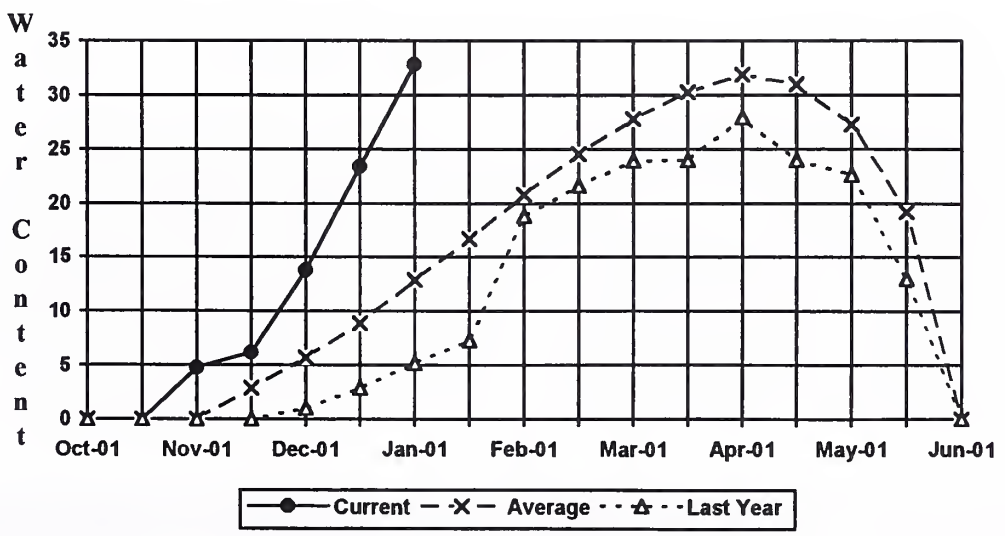
Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WALLA WALLA RIVER	2	550	251

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

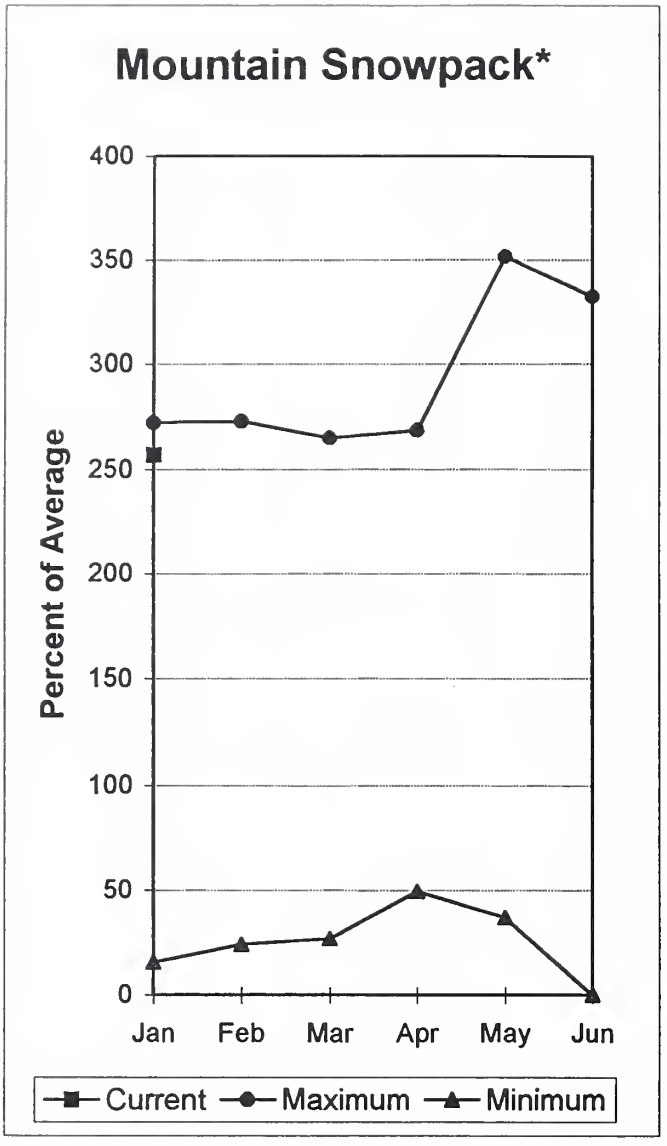
The average is computed for the 1961-1990 base period.

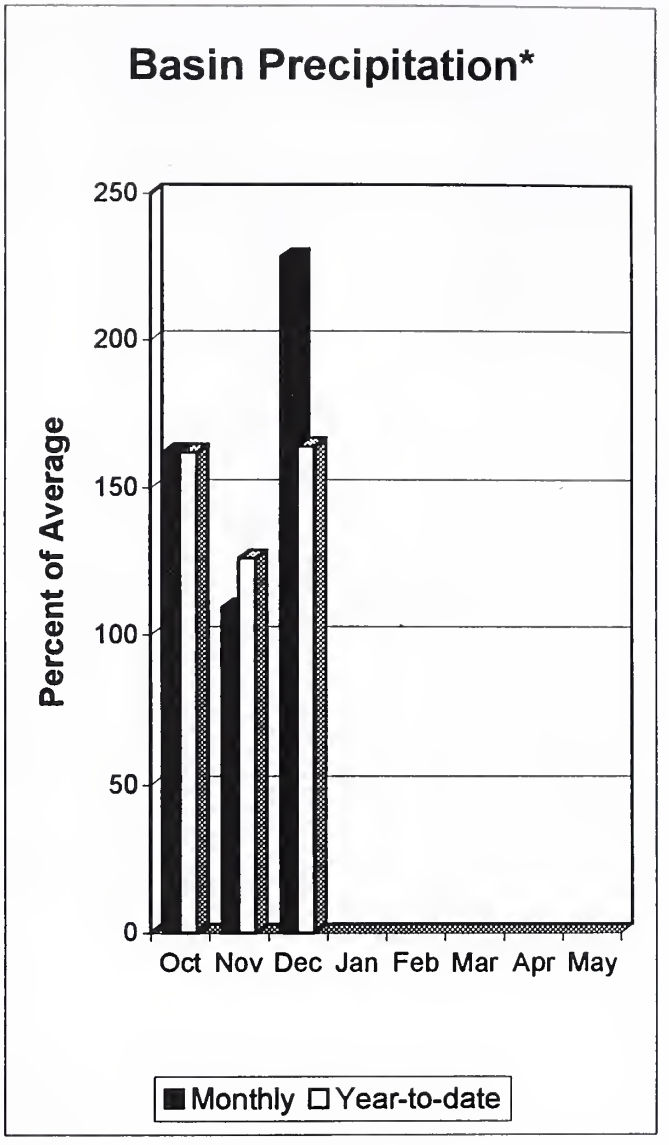
(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Touchet #2 SNOTEL
Elevation 5530 ft.



Cowlitz - Lewis River Basins





*Based on selected stations

The forecast for summer runoff in the Lewis River Basin is 122% of average. The Cowlitz River is forecast for 125% of average runoff. December streamflow for the Cowlitz River was 137% of average, and 153% for the Lewis River. December precipitation was 228% of average, 164% of average for the water-year. January 1 snow cover for the Cowlitz River was 218% and the Lewis River was 296% of average. The Paradise Park SNOTEL recorded the most water content for the basin and the state with 54.1 inches of water. Average January 1 water content is 23.6 inches. Both the Lewis and Cowlitz River Basins saw dramatic flooding around the first of the year. Some SNOTEL sites recorded near record rain falls and decreases in accumulated snowpack.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
LEWIS at Ariel (2)	APR-SEP	1144	1338	1470	122	1602	1796	1206
	APR-JUL	990	1177	1305	124	1433	1620	1053
	APR-JUN	863	1040	1160	124	1280	1457	935
COWLITZ R. bl Mayfield Dam (2)	APR-SEP	1084	2092	2460	125	2828	3822	1970
	APR-JUL	1365	1838	2160	125	2482	2955	1731
	APR-JUN	1169	1574	1850	125	2126	2531	1477
COWLITZ R. at Castle Rock (2)	APR-SEP	1387	3030	3300	124	3570	5201	2667
	APR-JUL	2298	2645	2880	124	3115	3462	2325
	APR-JUN	1970	2268	2470	124	2672	2970	1995
KLICKITAT near Glenwood	APR-JUN	132	154	168	153	182	204	110
	APR-SEP	173	200	218	156	236	263	140

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

(1) - The values listed under the 10% and 90% Chance of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

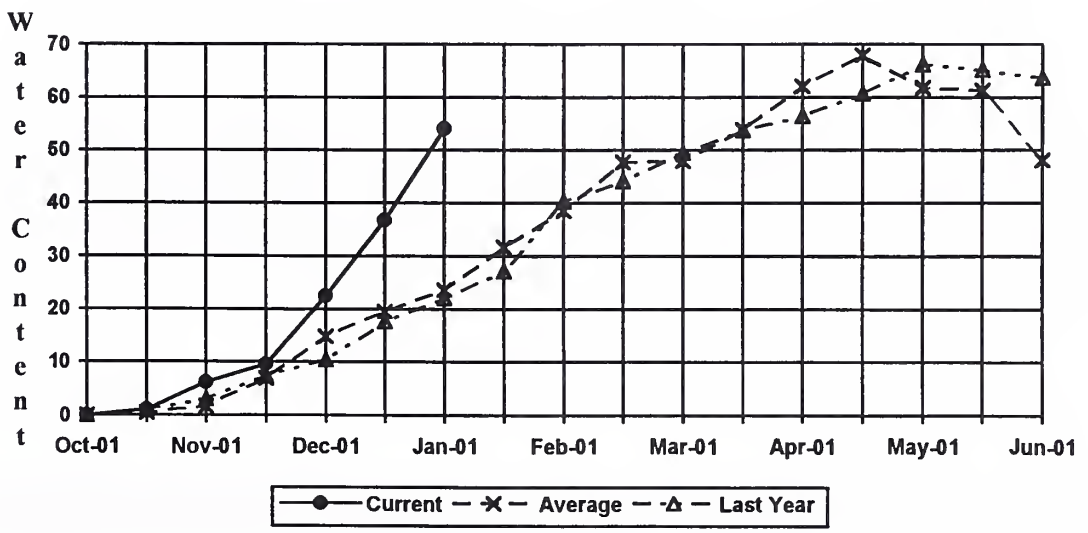
COWLITZ - LEWIS RIVER BASINS
Reservoir Storage (1000 AF) - End of December

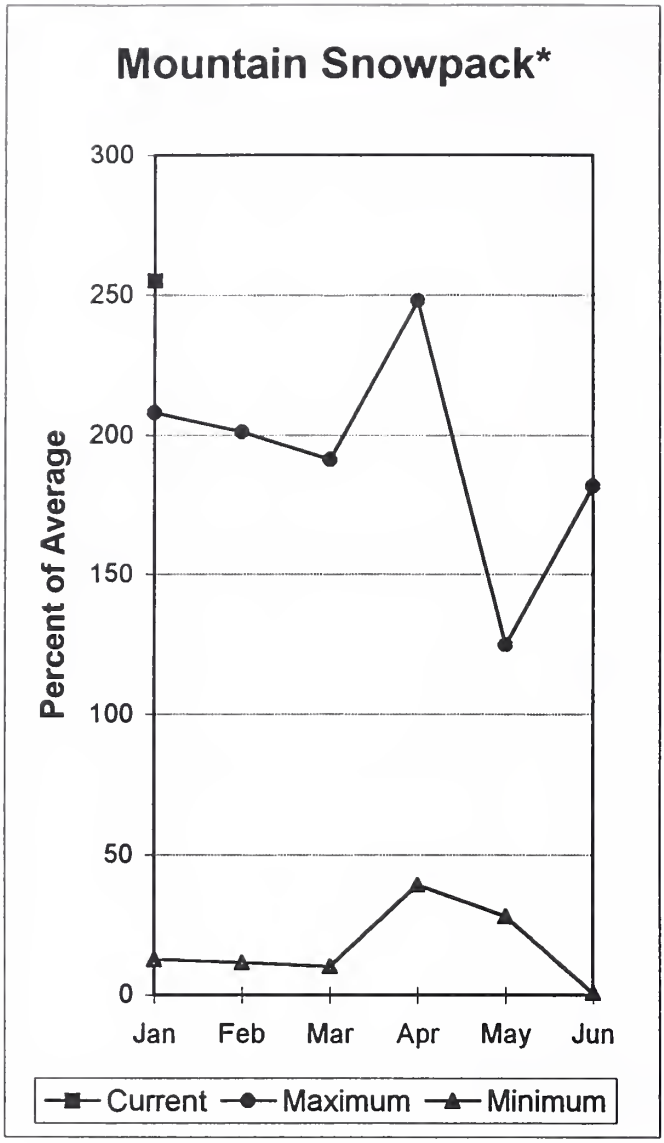
Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

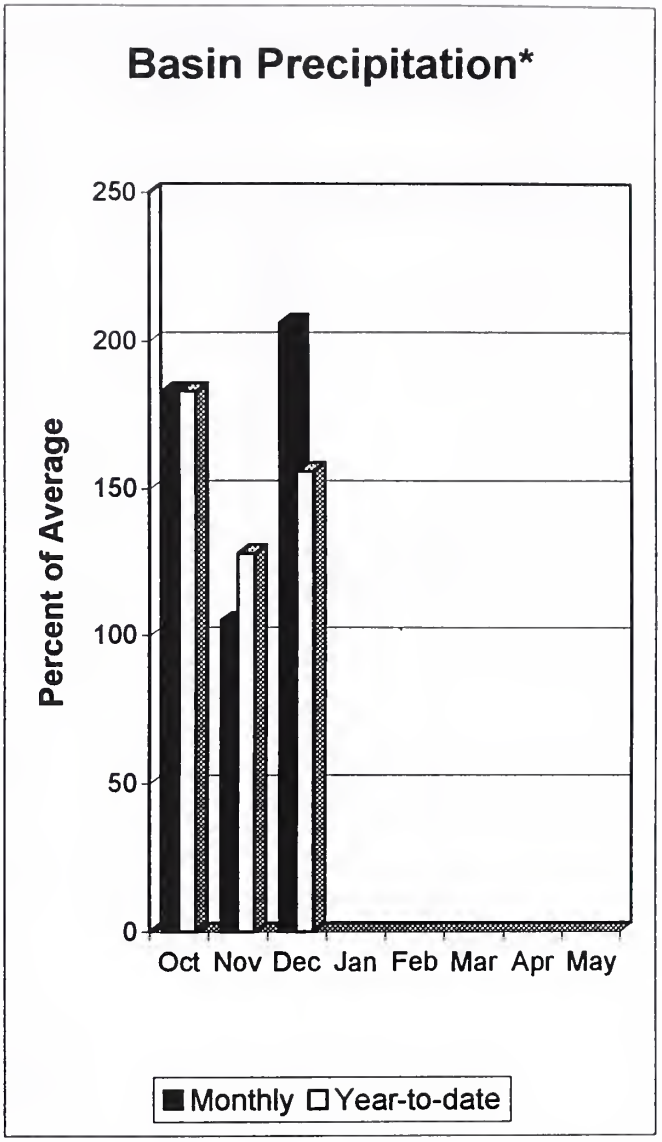
COWLITZ - LEWIS RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
LEWIS RIVER	4	631	296
COWLITZ RIVER	6	315	228

Paridise SNOTEL
Elevation 5120 ft.







*Based on selected stations

Summer runoff is forecast to be 147% of average for the Green River. January 1 snowpack was 254% of average in the White River Basin and 256% in the Green River Basin. Water content on January 1 at the Morse Lake SNOTEL, at an elevation of 5,400 feet, was 51.7 inches. This site has a January 1 average of 19.1 inches. December precipitation was 206% of average, bringing the water year-to-date to 156% of average.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter ======>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
GREEN RIVER below Howard Hanson Dam	APR-JUL	298	340	368	143	396	438	257
	APR-SEP	337	386	420	147	454	503	285
	APR-JUN	259	304	335	143	366	411	234

WHITE - GREEN RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

WHITE - GREEN RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
WHITE RIVER	2	274	254
GREEN RIVER	7	547	256

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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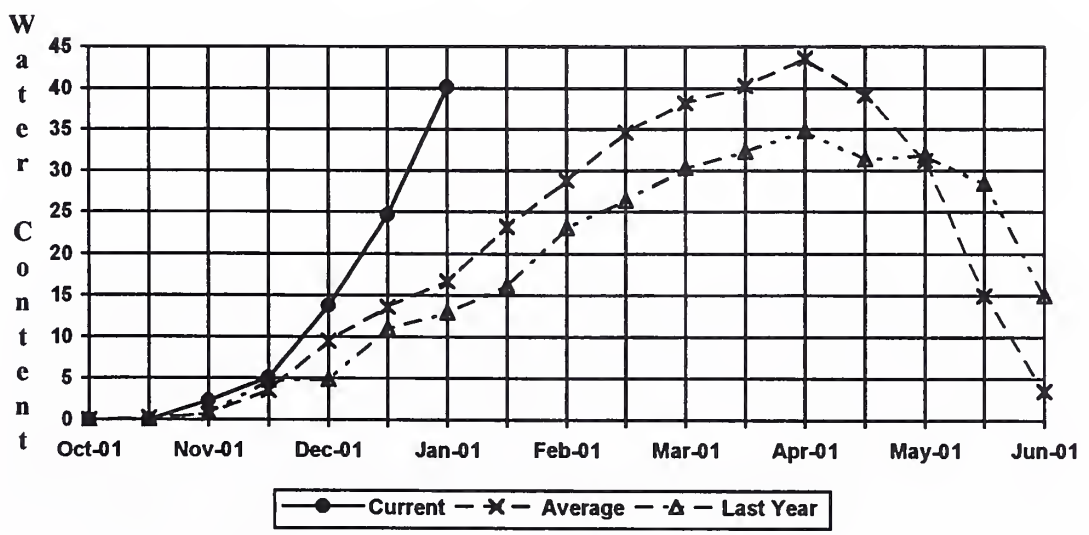
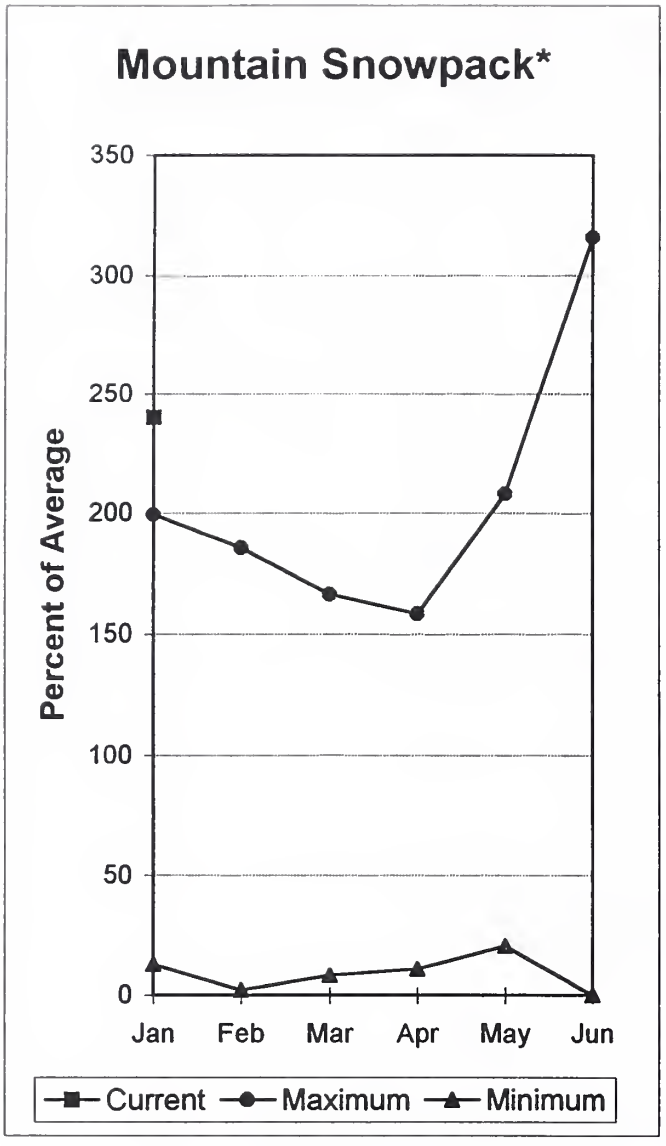
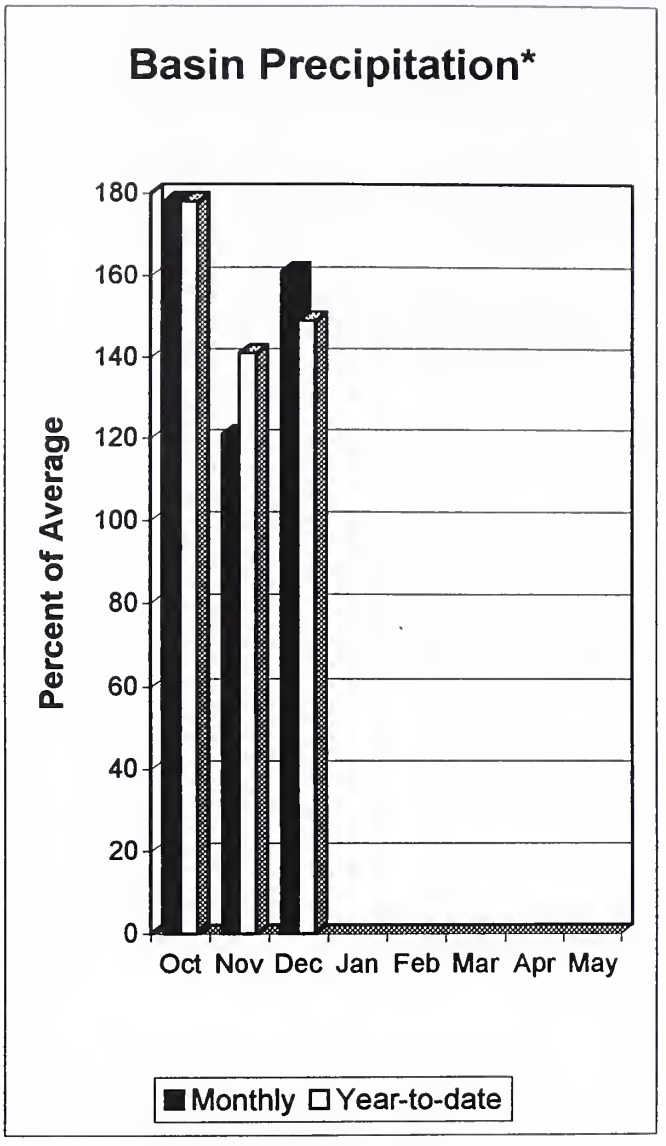
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Stampede Pass SNOTEL
Elevation 3860 ft.



Central Puget Sound River Basins





*Based on selected stations

Forecast for spring and summer flows are: 134% for the Cedar River near Cedar Falls, 137% for the Rex River, 148% for the South Fork of the Tolt River and 141% for the Cedar River at Cedar Falls. Basin-wide precipitation for December was 161% of average, bringing water-year-to-date to 149% of average. January 1 snow cover in the Cedar River Basin was 357%, the Tolt River Basin was 185%, the Snoqualmie River Basin was 215%, and the Skykomish River Basin was 204% of average. Stevens Pass SNOTEL, at 4,070 feet, had 32.6 inches of water content. Average January 1 water content is 15.3 inches. Only minor watershed flooding was experienced earlier this month. Urban flooding and landslides from saturated soils are posing a threat to life and property in the Central Puget Sound area.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
CEDAR RIVER near Cedar Falls	APR-JUL	77	93	105	136	116	133	77
	APR-SEP	82	101	114	134	126	145	85
	APR-JUN	71	84	93	136	101	114	68
REX RIVER near Cedar Falls	APR-JUL	27	34	38	141	43	49	27
	APR-SEP	29	36	41	137	46	54	30
	APR-JUN	26	31	35	140	39	44	25
CEDAR RIVER at Cedar Falls	APR-JUL	71	98	116	142	134	161	82
	APR-SEP	69	98	117	141	136	165	83
	APR-JUN	75	97	112	140	127	149	80
SOUTH FORK TOLT near Index	APR-JUL	19.1	21	23	150	24	27	15.2
	APR-SEP	22	25	26	148	28	31	17.8
	APR-JUN	16.3	18.2	19.5	149	21	23	13.1

CENTRAL PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

CENTRAL PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
CEDAR RIVER	3	524	357
TOLT RIVER	1	770	185
SNOQUALMIE RIVER	3	350	215
SKYKOMISH RIVER	3	387	204

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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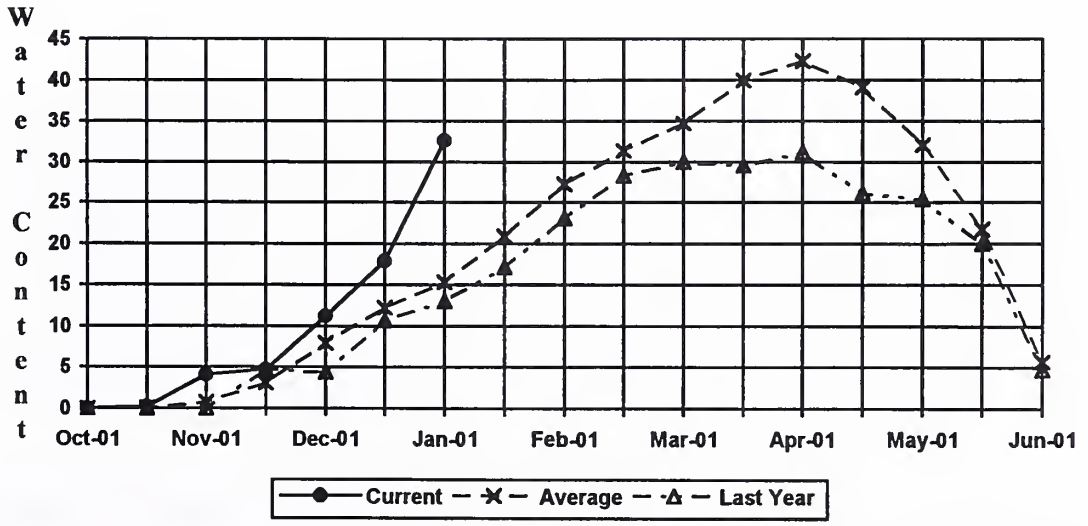
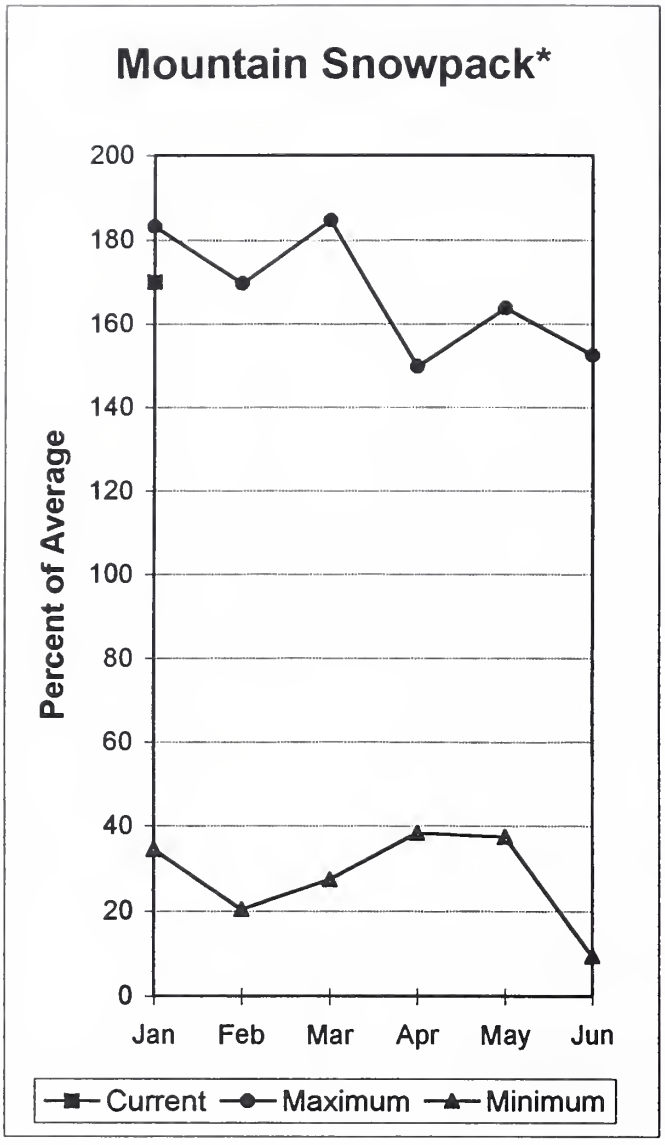
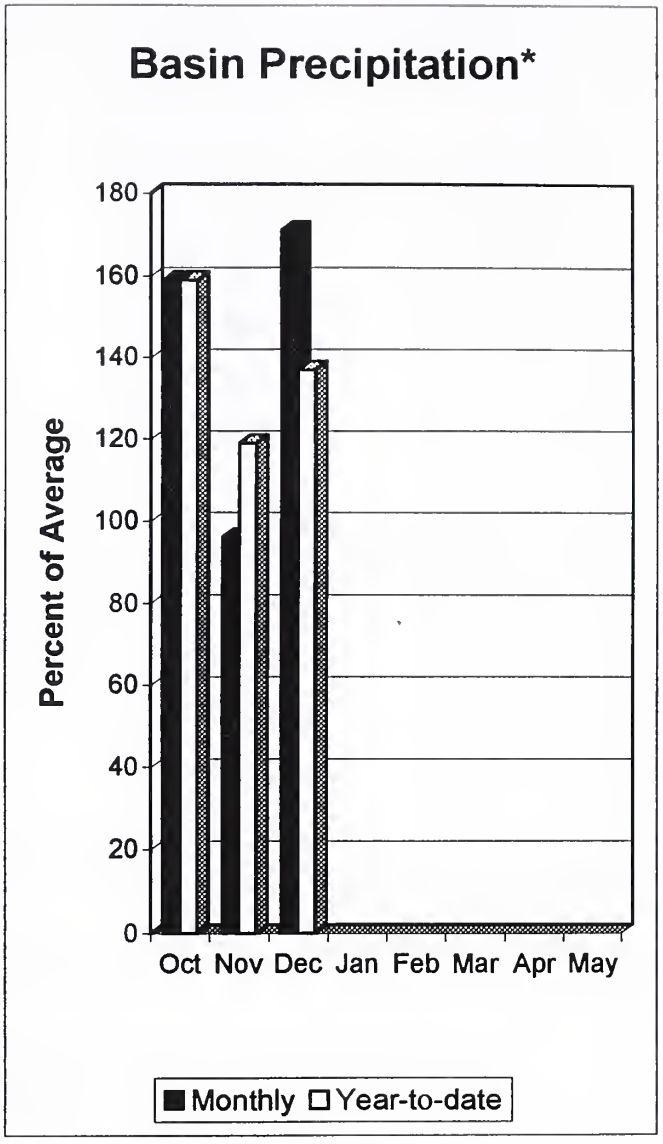
Stevens Pass SNOTEL
Elevation 4070 ft.



North Puget Sound River Basins





*Based on selected stations

Forecast for the Skagit River streamflow is for 120% of average for the spring and summer period. December streamflow in the Skagit River was 72% of average. Other forecast points included the Baker River at 124% and Thunder Creek at 119%. Basin-wide precipitation for December was 171% of average, bringing water-year-to-date to 137% of average. January 1 snow cover in the Skagit River Basin was 190%, and the Nooksack River Basin was 149% of average. Snowpack for the Baker River Basin was not reported this month. Rainy Pass SNOTEL, at 4,780 feet, had 29.5 inches of water content. Average January 1 water content is 15.4 inches. January 1 reservoir storage showed Ross Lake at 142% average and 79% of capacity. Whatcom and Skagit counties experienced extreme winter conditions during December. Deep snow and blizzard like conditions brought by counties to a near standstill for several days. The Army National Guard assisted with emergency rescues and evacuations.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	50% (Most Probable) (% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
THUNDER CREEK near Newhalem	APR-JUL	243	262	275	120	288	307	230
	APR-SEP	349	373	390	119	407	431	328
	APR-JUN	152	170	182	122	194	212	149
SKAGIT RIVER at Newhalem (2)	APR-SEP	2036	2384	2620	120	2856	3204	2185
	APR-JUL	1713	2003	2200	120	2397	2687	1830
	APR-JUN	1328	1549	1700	121	1851	2072	1410
BAKER RIVER near Concrete	APR-JUL	863	962	1029	123	1096	1195	836
	APR-SEP	1133	1244	1320	124	1396	1507	1064
	APR-JUN	621	699	752	123	805	883	611

NORTH PUGET SOUND RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg
ROSS	1404.1	1113.5	1260.8	783.9
DIABLO RESERVOIR	90.6	84.5	86.6	---
GORGE RESERVOIR		NO REPORT		

NORTH PUGET SOUND RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
SKAGIT RIVER	4	150	190
BAKER RIVER	4	425	152
NOOKSACK RIVER	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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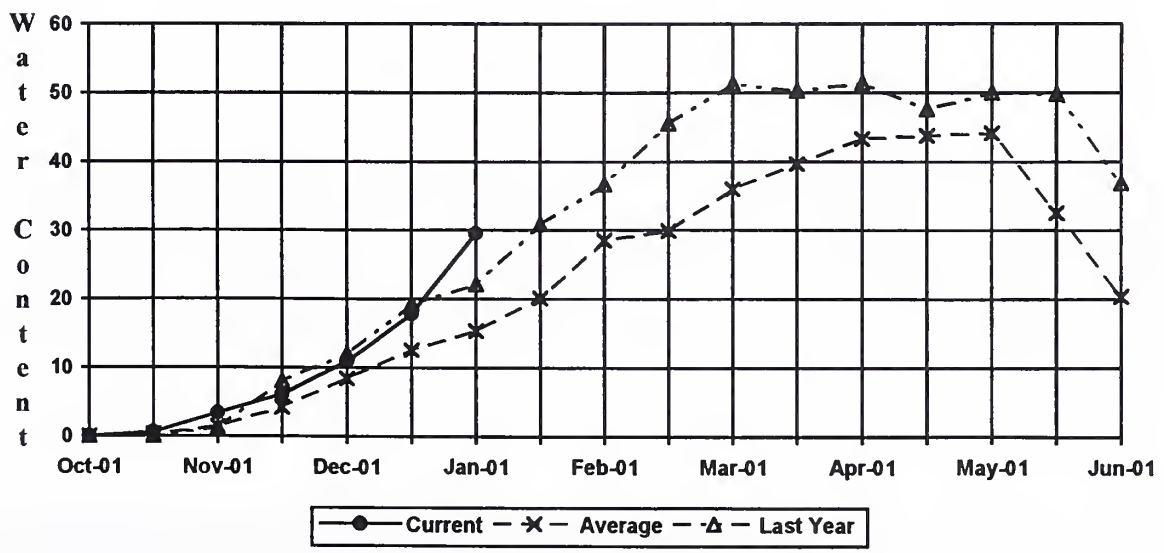
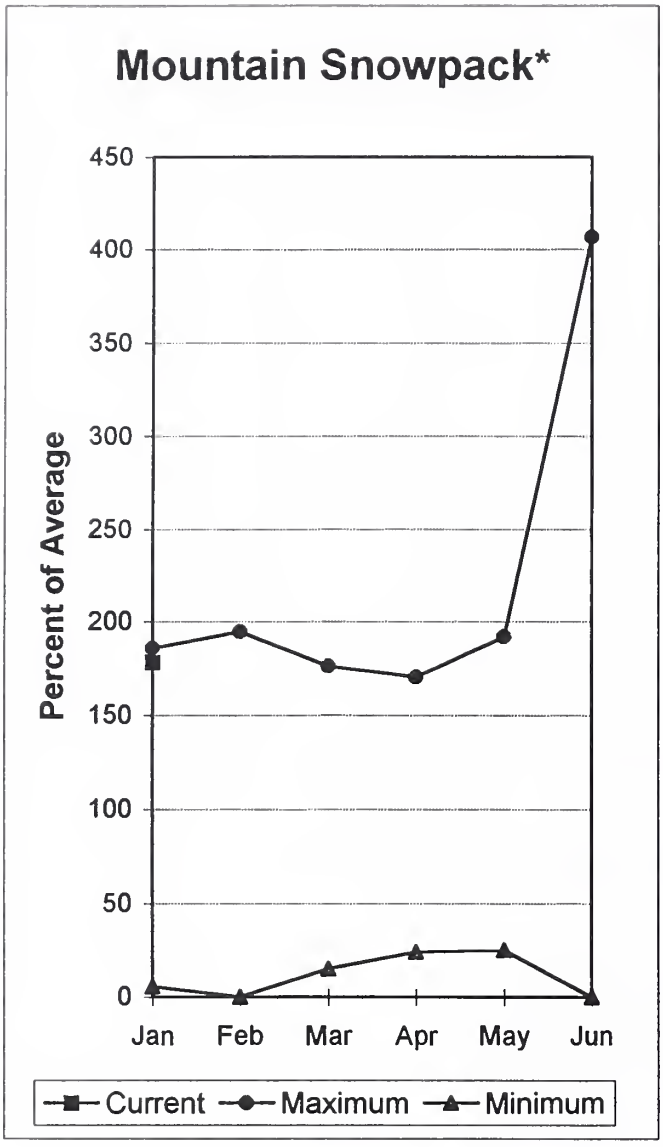
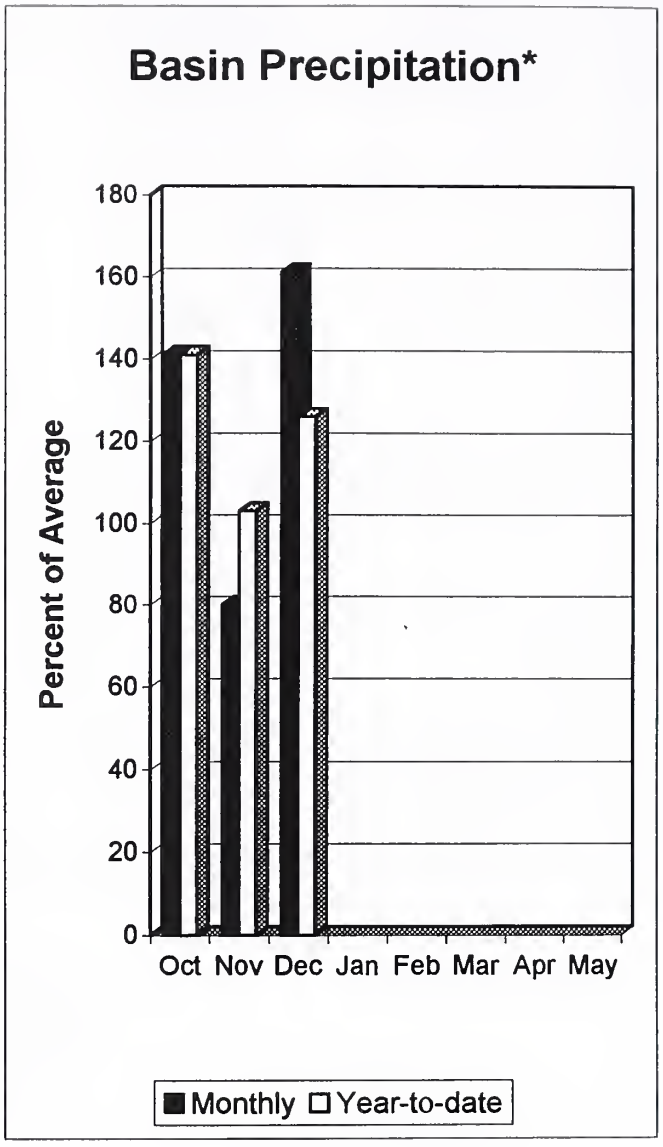
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Rainy Pass SNOTEL
Elevation 4780 ft.



Olympic Peninsula River Basins





*Based on selected stations

January forecasts of runoff for streamflow in the basin are for above average flows for both the Dungeness and Elwha Rivers. The Big Quilcene can expect near to above average runoff this summer also. December precipitation was 161% of average. Precipitation has accumulated at 126% of average for the water year. December precipitation at Quillayute was 20.3 inches, which is almost double the thirty year average of 14.6. Average January 1 snow cover in the Olympic Basin was at 178% of average. The Mount Crag SNOTEL near Quilcene had 20.1 inches of snow-water-equivalent on January 1. Average for this site is 11.3 inches.

For more information contact your local Natural Resources Conservation Service office.

Streamflow Forecasts - January 1, 1997

Forecast Point	Forecast Period	<<====== Drier ====== Future Conditions ======= Wetter =====>> Chance Of Exceeding * 90% (1000AF)	70% (1000AF)	50% (Most Probable) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30-Yr Avg. (1000AF)
DUNGENESS near Sequim	APR-SEP	145	169	186	122	203	227	153
	APR-JUL	119	139	153	122	167	187	125
	APR-JUN	90	105	115	122	125	140	94
ELWHA near Port Angeles	APR-SEP	487	572	630	124	688	773	510
	APR-JUL	411	479	525	124	571	639	424

OLYMPIC PENINSULA RIVER BASINS
Reservoir Storage (1000 AF) - End of December

Reservoir	Usable Capacity	*** Usable Storage *** This Year	Last Year	Avg

OLYMPIC PENINSULA RIVER BASINS
Watershed Snowpack Analysis - January 1, 1997

Watershed	Number of Data Sites	This Year as % of Last Yr	Average
ELWHA RIVER	0	0	0
MORSE CREEK	0	0	0
DUNGENESS RIVER	0	0	0
QUILCENE RIVER	1	283	178
WYNOOCHEE RIVER	0	0	0

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.

The average is computed for the 1961-1990 base period.

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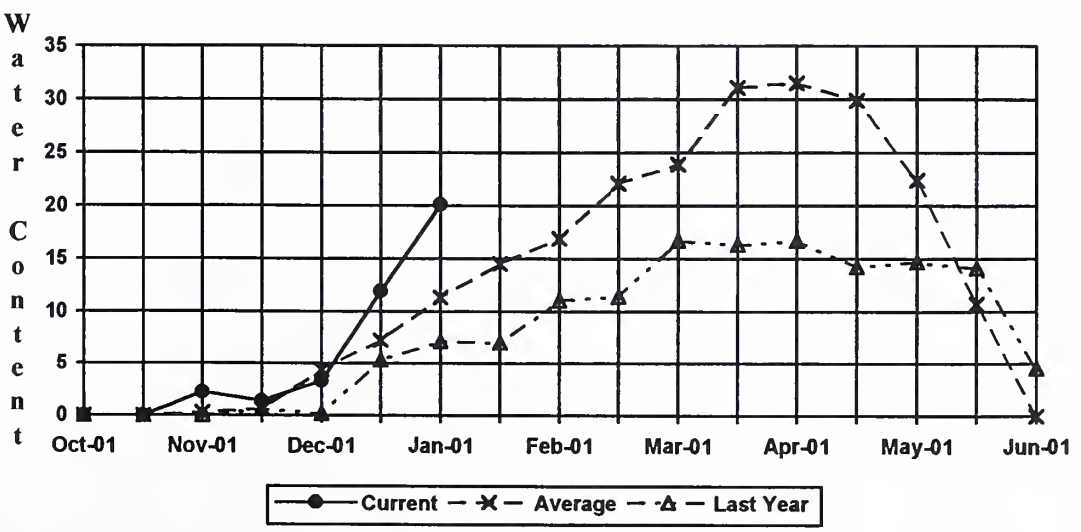
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Mount Crag SNOTEL
Elevation 4050 ft.



Issued by

Paul W. Johnson
Chief
Natural Resources Conservation Service
U.S. Department of Agriculture

Released by

Lynn A. Brown
State Conservationist
Natural Resources Conservation Service
Spokane, Washington

The Following Organizations Cooperate With the Natural Resources Conservation Service in Snow Survey Work*:

Canada	Ministry of the Environment Investigations Branch, Victoria, British Columbia
State	Washington State Department of Ecology Washington State Department of Natural Resources
Federal	Department of the Army Corps of Engineers U.S. Department of Agriculture Forest Service U.S. Department of Commerce NOAA, National Weather Service U.S. Department of Interior Bonneville Power Administration Bureau of Reclamation Geological Survey National Park Service Bureau of Indian Affairs
Local	City of Tacoma City of Seattle Chelan County P.U.D. Pacific Power and Light Company Puget Sound Power and Light Company Washington Water Power Company Snohomish County P.U.D. Colville Confederated Tribes Spokane County Yakama Indian Nation
Private	Okanogan Irrigation District Wenatchee Heights Irrigation District Newman Lake Homeowners Association

***Other organizations and individuals furnish valuable information for the snow survey reports. Their cooperation is gratefully acknowledged.**

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Washington Basin Outlook Report

Natural Resources Conservation Service
Spokane, WA